MARINE REVIEW

VOL. XXX. CLEVELAND, O., AUGUST 4, 1904. No. 5.

The Pioneer Sault Canal.

By CHARLES T. HARVEY, C. E.

MR. CHARLES T. HARVEY IN 1854.

The semi-centennial anniversary to occur next year of the opening of the first canal transit to and from Lake Superior, and the proposal of the Marine Review to make its history a special topic adds peculiar force to the request that the writer contribute such facts as came under his personal observation at the time of its inception and construction.

The record of the past half century places it not only far in the lead as to its commercial utilization, but also as without a rival in the economy and rapidity of its introduction into the world's economies, and as without a parallel instance of public spirit and honorable intent on the part of its original constructors who built it under contract with the state of Michigan. It seems well to review its history from three standpoints and concentrate attention upon the main features of its original promoting, providing and engineering departments.

The earliest promoting measures date back to 1837, and the progress of the same for the next fifteen years are briefly stated in a folder recently published by the Citizens' Association of Sault Ste. Marie, Mich., from which the following extracts were made:

"The first official action on record with regard to the canal on the American side of the outlet of Lake Superior was that of the governor of Michigan in his message to the first legislature convened in 1837 (the state having been admitted into the union the previous year), wherein he advocated the building of the canal by the state, with the result that a law was passed at that session providing for a survey of the same.

"The engineer in charge reported to the governor recommending dimensions for the canal to be 75 ft. wide and 10 ft. deep, and for two locks of same depth, each with 9-ft. lift, 32 ft. wide and 100 ft. long, and estimating the total cost at $112,544. In 1839 a law was passed authorizing certain state commissioners to contract for the canal of the size mentioned, and work was commenced during the spring of that year. But as the canal traversed a United States military reservation, and the federal authorities had not approved of the undertaking, the officer in command, acting under orders from Washington, marched a detachment of soldiers on to the ground, ejected the contractors and caused all further canal work to cease.

"The legislature of Michigan at its last session passed a resolution protesting against the ejectment, and demanding reparation from congress, but without result. In 1840 a bill was introduced into congress in accordance with a memorial from the Michigan legislature asking for an appropriation of 100,000 acres of land, but Henry Clay, the famous orator and leading statesman, made a speech against it as, to quote his words, *'a work beyond the remotest settlement in the United States, if not in the moon.'* and the measure was defeated.

"In 1843 the Michigan legislature by resolution invoked the aid of the legislatures of New York, Pennsylvania, Ohio, Illinois, and Wisconsin in jointly promoting favorable action by congress for the canal but without avail. Similar proceedings followed in 1844-8-9, but proved futile. Finally as the result of the strenuous efforts by prominent citizens in the Great Lakes region, stimulated by the profitable development of mining enterprises on the south shore of Lake Superior, congress passed an act on August 21, 1852, granting 750,000 acres of land to the state of Michigan to aid in building the canal."

At the last date mentioned the writer was at the American Sault as an invalid seeking restoration to health. At the age of twenty-one, in 1850, he entered the service of Messrs. E. & T. Fairbanks & Co., the scale manufacturers of St. Johnsbury, Vt., and in 1851-2 was made their general western agent in charge of establishing agencies for the sale of their weighing machines in the large western cities.

In the winter of 1851-2 he was the victim of a most severe attack of typhoid fever but was fortunately able to reach his parental home in Connecticut in its earlier stages. When

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

able to leave his room after months of confinement his principals most considerately proposed to him to try the recuperative powers of the Lake Superior climate and incidentally examine and report upon the mining resources of that region in which they had some financial interests.

Gladly accepting the plan, he was convalescing as a boarder at the Baptist mission at the Sault, when word reached there of the passage of the canal grant by congress. This led him to examine the locality where it must be built with special attention. As soon as his health permitted he proceeded to the iron and copper districts and spent a couple of months in leisurely examining their development, and meanwhile regaining health and strength most satisfactorily.

He saw the first, and then only opening of a Lake Superior iron mine on the Jackson Co.'s location, in Marquette county; also saw the process of cutting up the 250-ton mass of native copper at the Minnesota mine in Ontonogon county, the largest yet found in the world.

Returning to the Sault in October he wrote to the Messrs. Fairbanks of his observations in the mining district of the upper peninsula, and his views of the effect of the building of the canal as bound to render available the immense latent wealth in minerals there, and of the probability that lands of great value could be selected as a part of the national subsidy with remarks upon the probable cost of building that water-way—the lack of public knowledge of and interest in the undertaking, and concluded by asking their permission to devote himself to promoting the enterprise at least so far as to obtain suitable action by the Michigan legislation which would meet the following January and on whom congress had conferred full control in the premises. The reply came in due course that the firm approved his ideas, and with the proviso that he should first establish an agency for them in Cincinnati, they granted a furlough from further attention to their business the coming winter and authorized him to draw on them for the expenses of the new venture.

MR. CHARLES T. HARVEY AS HE IS TODAY.

In pursuance of this arrangement he immediately proceeded to Ohio and completed matters as his principals desired, then went to Central New York and secured the services of one of the most experienced engineers on the Erie canal, L. L. Nichols of Utica,—returned with him to the Sault on the steamer Northerner, Capt. B. G. Sweet, late in November, and organized a surveying party. While Nichols made a survey of the canal site he made a trip down the St. Marys river to explore for a suitable quarry to furnish stone for the locks. From information thus in part obtained the limestone quarry was located on Drummond's island from which a large portion of the masonry materials was subsequently procured. With the survey data obtained passage was taken on the last steamer from the Sault that season.

When the legislature convened at Lansing the first week in January, 1853, its duration was limited by the state constitution then in force, to forty sessional days which did not leave much time for lengthy deliberations. It soon became apparent that the writer was the only person in attendance who was fully posted as to the survey data and had personal knowledge of the general features of the case. The latest survey made by state engineers in 1839 for a canal 75 ft. wide and 10 ft. deep with locks 100 ft. long and 32 ft. wide had become obsolete. The United States had made no survey, and hence the private one made within the preceding sixty days was the only reliable information available. When the committee appointed to take charge of the subject, composed mostly of farmers, were ready to proceed in the initiating stages, and the writer had been invited to explain the situation to them, an executive session was held, at the conclusion of which the chairman informed the writer that as he seemed to be the only person who fully understood the subject the committee requested him to draft a suitable bill for their adoption. He had already established confidential relations with the late James F. Joy, then the legal counsel of the Michigan Central railway, and with the late John W. Brooks, then its managing director, and after consultations with them drafted a bill which the committee reported and the legislature passed precisely as thus originated.

The size of the locks was generally expected to be 250 ft. long by 50 ft. wide, and a law specifying those dimensions would have been readily adopted, but the writer's conviction was that the commerce of Lake Superior was destined to require as large steamers as were used on the lower lakes, and accordingly specified in the bill the minimum lockage area to be 350 by 70 ft. When the bill was reported Capt. Eben B. Ward of Detroit, then the largest individual steamer owner on the lakes, caused the following letter to be sent to the members of the legislature and published in the newspapers:

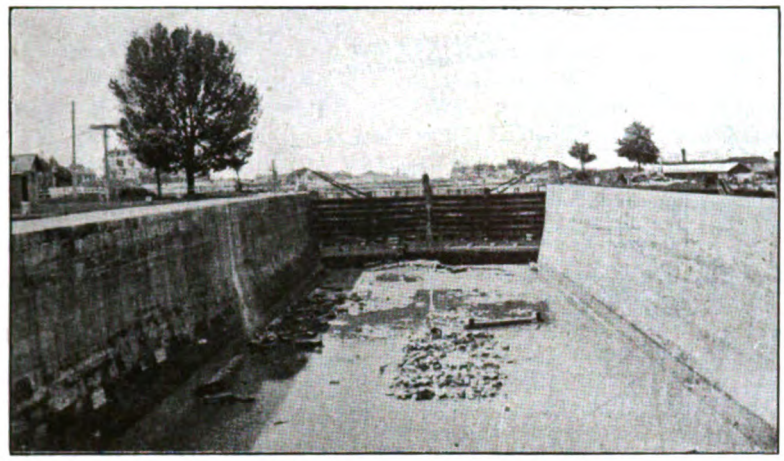
"Detroit, Jan. 29, 1853.

"Hon. Wm. A. Burt, member H. of R., Lansing, Mich.:

"Dear Sir:—The deep anxiety I feel in common with the rest of the community for the early completion of the Sault Ste. Marie canal, induces me to write to you on the subject. I fear the defeat of our long cherished hopes. The legislature in their anxiety to prevent undue speculation by those who would be disposed to contract to do the work are in great danger of going to the opposite extreme, and make such requirements as will deter competent men from taking the contract for the land. The size proposed by the senate bill, 350 by 70

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

ft. locks, is entirely too large for the locks. The crooked, narrow, shallow and rocky channels in the St. Mary's river will forever deter the largest class of steamers from navigating these waters. Aside from the impediments in the two Lakes George there are several places where the channel is very narrow, with but 11 ft. of water clear of rocks and the channels too crooked for the large class of steamers to pass in safety. This I regard as a conclusive argument against making the locks so large as is contemplated.



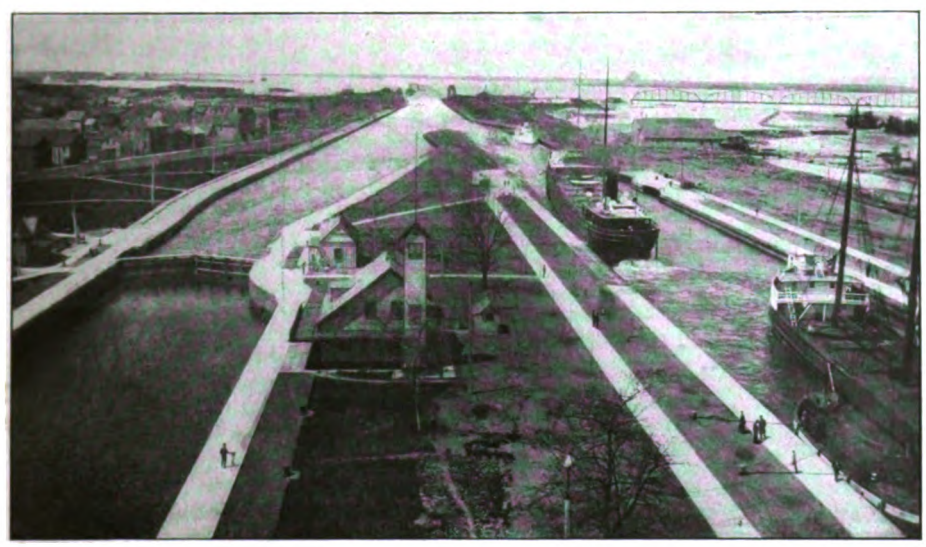
ORIGINAL LOCK OF 1855.

"I do not believe there is the least necessity for making the locks over 260 ft. in the clear and 60 ft. wide, as no vessels of larger dimensions than could pass such locks can be used there with safety without an expenditure of a very large sum of money in excavating rock at various points along the river, a work that is not likely to be undertaken during the present century. The value of wild lands may be estimated by ascertaining the amount actually realized by the state for the large grants that have heretofore been made for purposes of improvement when no taxes were collected until the lands were sold to settlers, I think it will be difficult to find a value of 25 cents per acre for all such grants made to this state. A well organized company might make the lands worth 75 cents per acre provided they were not taxed while held by the company. I have no doubt that the small sized canal required by the act making the grant of land would cost $525,000 or 70 cents per acre. Add 8 cents per acre for interest during the construction of the work and 15 cents per acre for selection and location brings it to 93 cents per acre, a price at which any quantity can now be located without any risk of loss and with much greater chances of making desirable selections. If the legislature will appoint a committee who shall act with the governor to make the best contract for the state they can, holding them responsible for a faithful discharge of their duties, I feel confident we shall succeed in securing the great object of our wishes. But if the bill should materially restrict the governor in his powers I think we have good reason to fear that the most vital interests of the state will be delayed for years to come.

"Hoping for a favorable issue to this absorbing question, I remain,

Truly yours,

"E. B. WARD."



SAULT STE. MARIE CANAL AS IT APPEARS TODAY.

A joint meeting of the special committees of both houses was hastily called and the writer interrogated. He gave his reasons for proposing the larger dimensions, and assured the committee that his principals and their associates would make a bid based on the same. This saved a reduction being made and the original bill was passed, but the incident and the letter should certainly be preserved in the canal records as a way mark or milestone from which to estimate the development of after years in that connection.

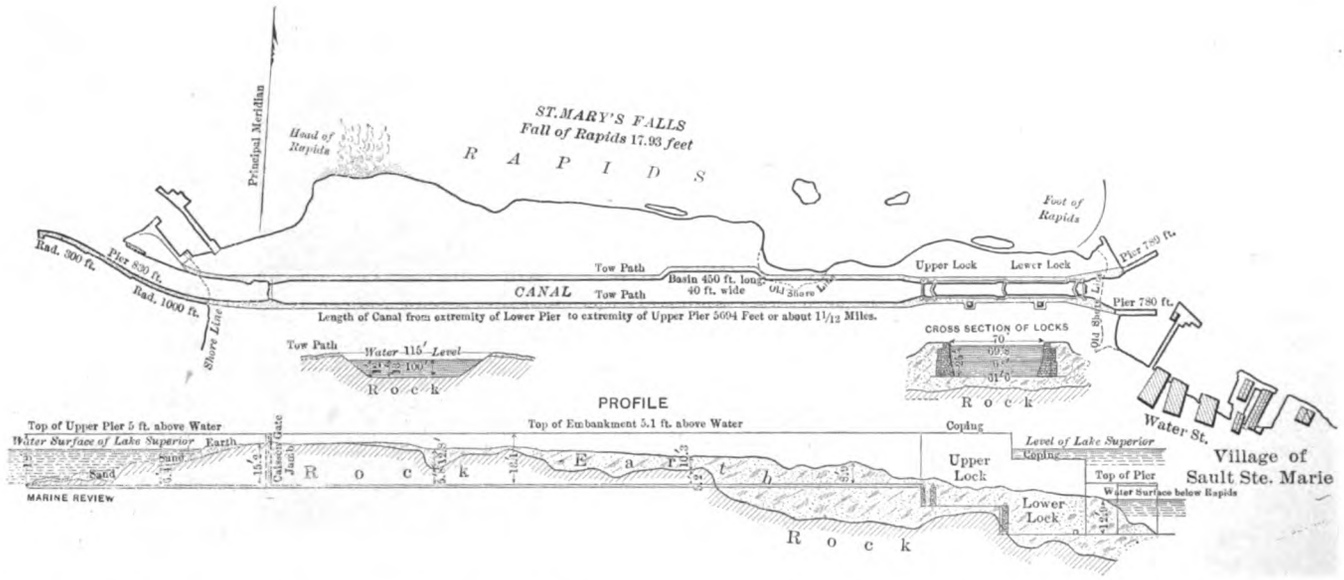
One provision in the bill required the state to award the contract for the full amount of the lands donated by congress, but to the bidder presenting the best financial ability, and as the state constitution forbade any special charters to corporations bids might be received from or assigned to companies chartered by other states.

When advised of the passage of the law, the Messrs. Fairbanks invited well-known capitalists in New York and New England to join with them in making the necessary bid, which was formally tendered and accepted by the state commissioners. The first name in the list of bidders was that of Joseph P. Fairbanks, one of the firm first mentioned, his associates being J. W. Brooks, Erastus Corning, August Belmont, H. Dwight, Jr., and Thomas Dwyer.

Immediately upon this being done the writer, who will now designate himself as the promoter, secured from the governor an appointment as special agent of the state to select the lands to be donated within its border by congress in aid of the canal, engaged a steamer to take him to the St. Mary's river, then closed by ice, and dispatched a special messenger on snow-shoes to the United States land office for the Upper Peninsula at the Sault and authorized a deputy there to withdraw lands from sale in certain localities which he designated; returning he went to Washington and secured from the United States land commissioner confirmation of his power so to do, which was afterward litigated but sustained by the courts.

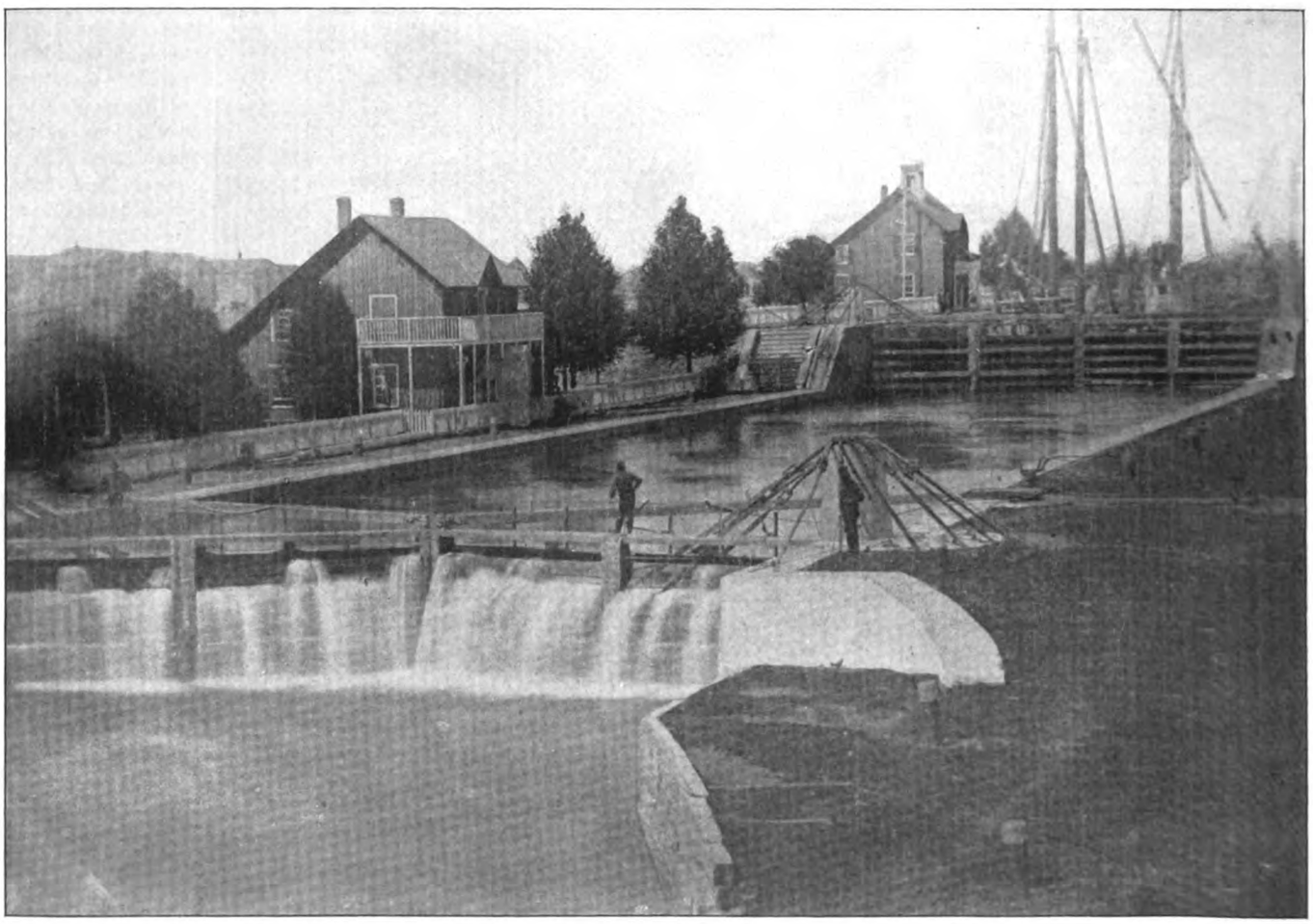
The knowledge upon which he had acted he had gained during his touring among the mines during the previous summer, and the 140,000 acres more or less which he thus secured for his principals realized millions upon millions of dollars

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY



to them in later years. It will be enough to state that among them was the location afterwards developed into the Calumet and Hecla copper mine. All this was done of his own motion and individual judgment, as not one of his principals had any knowledge of the lands or their value, but his prompt action forestalled the selection of many of the lands by speculators who were waiting for navigation to open to apply for them at the land office later in the season.

The promoter's next move was to proceed to Albany, N. Y., and secure a charter for the St. Mary's Falls Ship Canal Co. from the legislature of the state of New York to which the individual bidders could assign their contracts. This accomplished in an unusually short time, his principals came together in the building at the corner of William and Wall street, then as now occupied by the Bank of the State of New York, and organized under the charter. At the meeting the



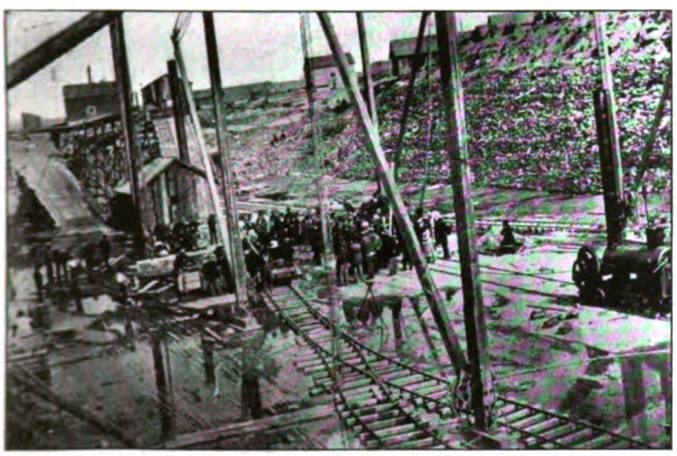
THE LOCKS THAT WERE IN CONTINUOUS USE FROM 1855 TO 1887.

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

promoter was appointed the general agent of the company, with unlimited executive powers, and a substantial stock interest assigned to him for his promoting achievements up to that time.

Thus far as to promoting features; now as to the general business management. The St. Mary's Falls Ship Canal Co. was organized as before mentioned by the election of directors and officers as follows:

President, Erastus Corning, Albany, N. Y.; Vice President, John W. Brooks, Detroit, Mich.; Erastus Fairbanks, St. Johnsbury, Vt.; John M. Forbes, Boston, Mass.; John F. Seymour, Utica, N. Y.; Benjamin Tibbitts, Albany, N. Y., board of directors; Charles T. Harvey, Sault Ste. Marie, Mich., general agent.



LAYING FIRST STONE IN WEITZEL LOCK, 1876

The sum of $50,000 was ordered placed forthwith to the credit of the general agent in bank at Detroit. He was authorized to draw on the treasurer for further funds as needed and requested to commence and take the oversight of the construction work until an engineer and a superintendent of construction were appointed, as was then expected would shortly be done. The general agent then addressed the board and stated that in that remote locality a commissary department was a prime necessity to secure and retain reliable labor, was of double importance as a preventive or regulator of strikes, which were specially to be guarded against under such isolated conditions as would exist at the work, and he proposed to proceed on those lines from the start. To this policy the directors' assent was given and the general agent proceeded to make Detroit his temporary headquarters.

There he engaged C. W. Chapel as foreman of excavation work, purchased horses, tools and supplies, and securing from the United States Indian agent the rental of the agency premises for his own residence at the Sault. Loading the steamer Illinois with the supplies and about 400 men he arrived at the Falls on June 1 and on the 4th had the men housed and ready for work. He formally broke ground on that day by wheeling out the first barrow of earth from the "cut" and then regular operations commenced. A commissary department in charge of Norman Day as steward was organized. Shanties were built near the work to house fifty men in each with a man and wife as caretaker and cook. The number of shanties gradually increased to about fifty, and at one time some 500 employes of higher grade found board and lodgings about the town. A hospital was placed on one of the islands near the rapids, a salaried doctor for the force was appointed, and the expenses provided for by a charge of 25 cents per month per capita.

The practical working of this system was illustrated in the case of a carpenter from Illinois who was a victim of malaria. He worked for a few days, paid his 25 cents, soon after collapsed and was sent to the hospital. He developed a slow fever, was invalided for the winter season of six months, had the attention of trained nurses night and day, the best of food, and when sufficiently recovered to travel received $25.00 to pay his fare to his home.

"Who would believe," he exclaimed on leaving, "that there was a corporation on earth which would provide for a sick man like this."

All cases of injury by broken bones, etc., were also thus provided for, but the crucial test came when the cholera became epidemic there in 1854. But three cases ended fatally of those sent to the hospital, while over 100 died among those living about the town. Every public work of like magnitude in the country was obliged to suspend building operations because of the cholera scourge that season, except the Sault canal which was not interrupted materially.

The savings effected by the commissary system largely contributed to the ultimate result of the work being the most economically prosecuted of any of like importance on record. The carefully registered returns in the steward's office proved that the average cost of boarding and lodging the men was 19 cents per diem.

Strikes were prevalent and laborers scarce throughout the country. Emissaries from railway contractors swarmed about the village seeking to entice the workmen to engage elsewhere. It was found necessary to send foremen to New York to hire men aboard emigrant ships and bring them in gangs, also paying their fare. Wealthy citizens and some farmers in the upper peninsula now living can be named who thus found their way to that district.

But one serious strike occurred and that was concluded

WEITZEL LOCK MASONRY CONSTRUCTION, JUNE, 1877.

within twenty-four hours. While the strikers were marching about town, a long procession of a thousand or more in line, the provisions were removed from the shanties, and when dinner time came and the men returned with good appetites, they were informed by the caretakers that orders had come from the office that no regular meals were to be served on "general training days." Fasting was the only alternative, and before bedtime a committee of the strikers called on the agent to say for the men that if he would provide rations for the next day the men would unconditionally return to work the next morning. The proposition was duly accepted and the work promptly resumed.

To mention one interesting item out of many illustrating the practical working of the commissary system, it can be stated that when the list of supplies to be provided for the winter season, where for six months none could be imported, it was decided to order several thousand bushels of white

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

DEMOLISHING ORIGINAL LOCK OF 1855 TO MAKE ROOM FOR THE GREAT POE LOCK—VIEW TAKEN NOV. 20, 1889.

beans as a reserve for emergencies. The price was then unusually low and the order was filled. When the work was completed a thousand or more bushels of the beans remained left as a surplus,—they had not deteriorated in quality but the market price had more than doubled and they were re-shipped to the port from which they came at about $1 per bushel profit.

ENGINEERING—FEATURES OF THE CANAL.

When the canal work was undertaken it was stipulated in the contract that the state should appoint a corps of engineers to inspect and approve of the work as it progressed, and the chief of the corps appointed in due course was Col. Augustus Canfield of the United States corps of topographical engineers, a son-in-law of ex-Governor Cass, afterward secretary of state. He was a martinet in military etiquette, did not possess an originating mind, but relied on precedents. He had charge of preparing the plans, and as all small lock gates were then worked by men pushing with their backs against long projecting gate arms, his plans were upon that system. The prism of the canal in rock sections was to be of stipulated width, but if beyond that the banks were left untrimmed, with jagged edges, with liability of injury to vessels sliding against them. That was deemed the vessel captain's risk and the contractors were not required in the written agreement to trim up the sides. The colonel came early to the location, and assuming to direct as well as inspect the work on the arrival of the working force in charge of the company's general agent, he treated the latter as though he was of inferior rank and subject to his command. When the assumption was personally applied the result was the agent's demand for an apology on the spot or an undignified alternative. The apology was forthcoming on time and the affront never repeated, but the relations between the two officials were not of the most cordial character ever afterwards.

The colonel had designed pumping machinery and a system of excavation by means of swinging derricks which were introduced at the outset. The agent watched their operation for a time and concluded that the system was not sufficiently labor saving. He made a trial of another method coincidentally, keeping accurate tab on the two. He then sent a report to the head office at Albany proving that every cubic yard of excavation cost nearly double by the colonel's operation and asked for instructions. The reply came back advising him to adopt the cheaper method. He then took full control and the workmen knowing where their pay came changed to the agent's plan. The colonel was furious and announced that he had demanded of the directors that their young, inexperienced superintendent should not interfere in engineering affairs in which he was a novice, but must devote himself solely to the outside business affairs.

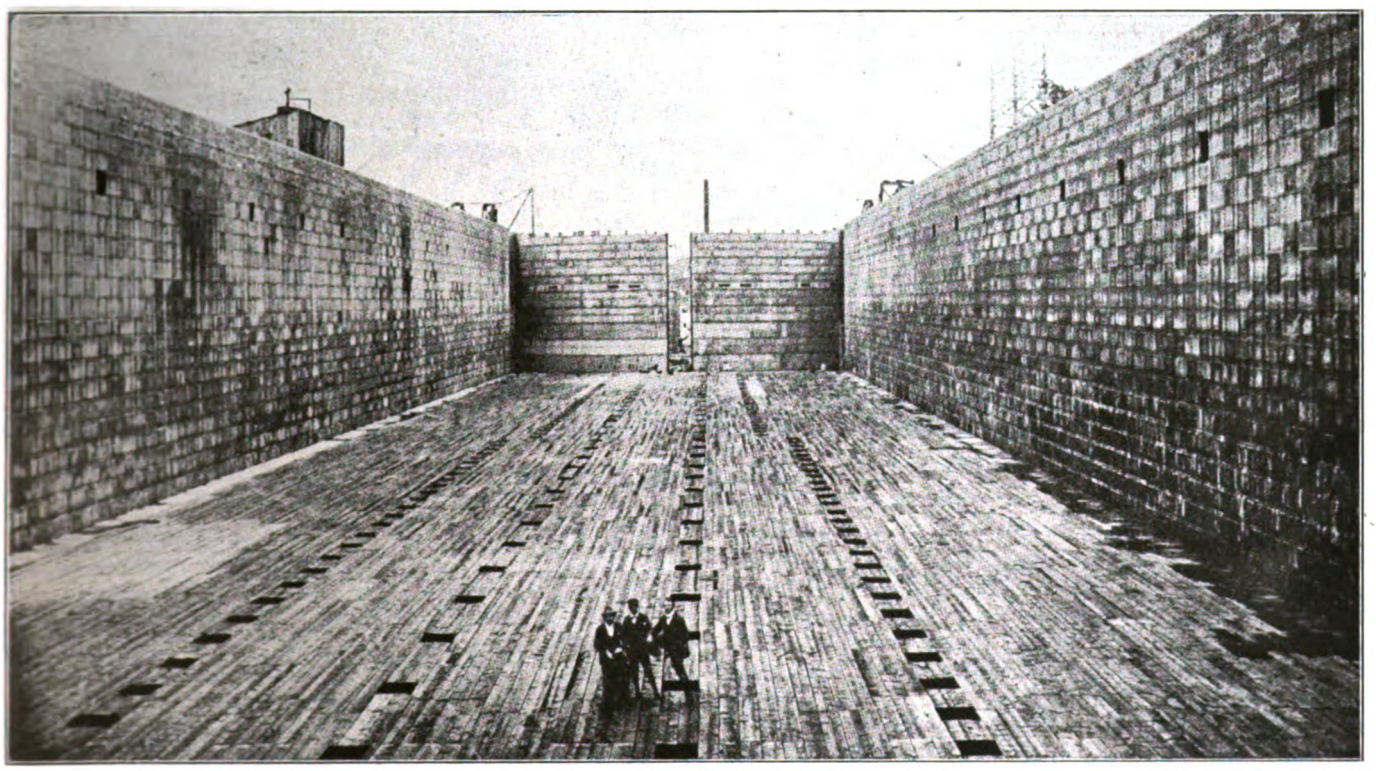
The communication went forward, but the facts were known in advance at headquarters, and the directors were too shrewd business men to choose paying double cost for actual work in order to humor notions of precedence and etiquette. The reply came back that the vice president, who was an engineer of national reputation, would visit the work with authority to decide on plans of procedure, but until he made report their agent must direct all the operations for which they were financially responsible.

When the vice president paid the visit and endorsed the agent's methods the colonel took a long vacation, but by consent retained exclusive charge of preparing the lock chamber doors. The fastenings for these proved a dismal failure and a plan of the agent's for the same purpose was substituted with entire success. The agent gradually assumed the functions of chief engineer and directed all departments during the winter of 1853-4. In the following spring the president and a majority of the board visited the works. They signed a

Generated on 2024-07-26 21:32 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

joint letter addressed to the agent stating that they were more than satisfied with his administration of affairs, but they had become convinced that they were imposing more duties upon him than any individual could be expected to perform, and they had selected an experienced contractor by the name of Ward to act as superintendent of construction, who accompanied them and remained to assume such duties. But the cholera arrived soon after, and he being indiscreet despite the agent's cautions, fell an early victim, and the latter was again in sole charge.

The colonel had planned to make his mark in building the coffer dam at the west end of the canal to restrain Lake Superior while full depth in the prism was being excavated. Its site was prepared early in the year with the understanding that he was to have sole charge of its installation, and his corps of assistants were detailed to assist in its progress.

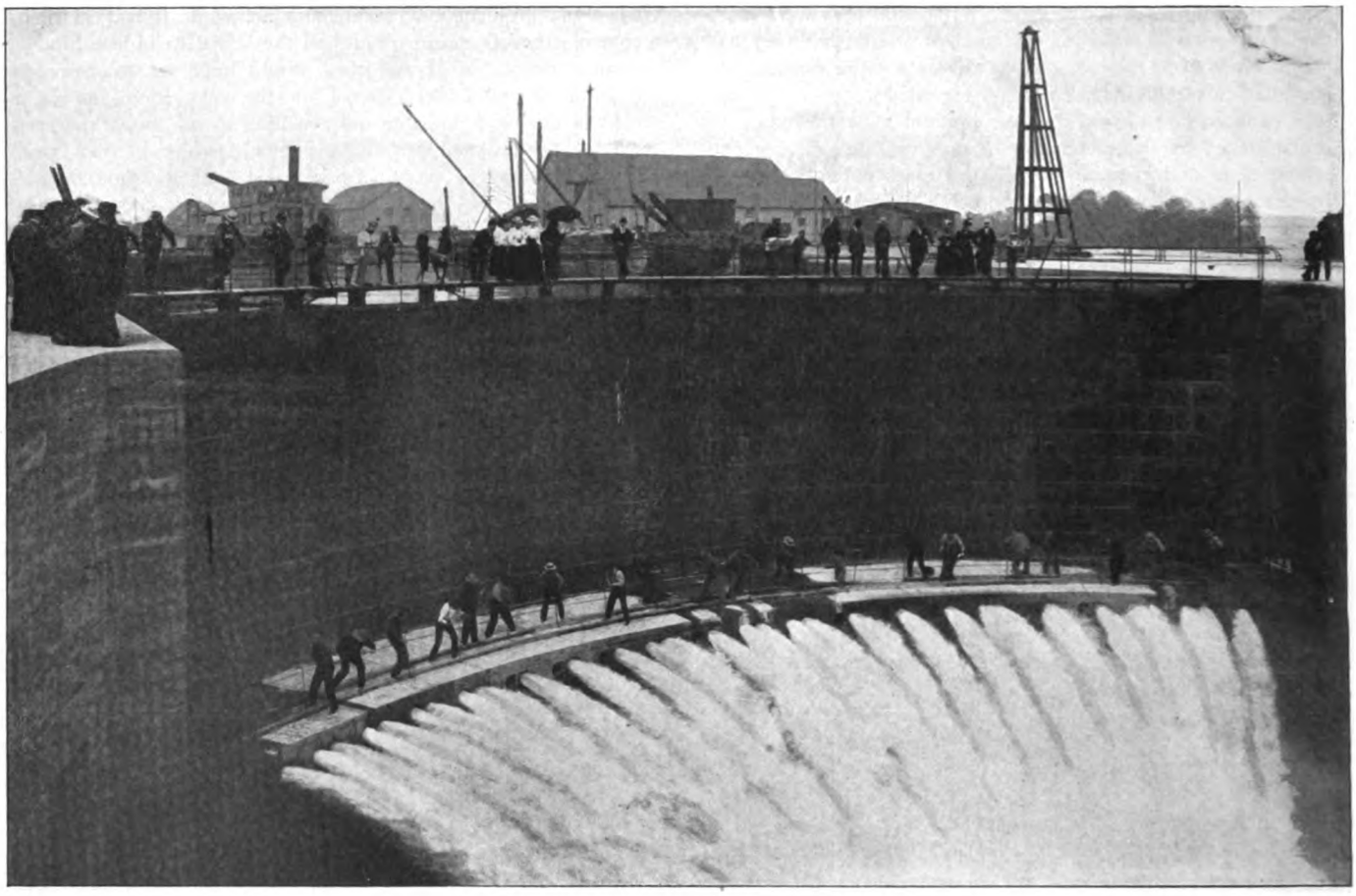


THE GREAT POE LOCK, 1896.

Before it was completed the colonel died in Detroit, but his assistants continued the work. Special material was hauled from a long distance to render it waterproof and no expense spared to perfect the plan. Work on the canal progressed until its use became necessary. Then it was tested but failed to stand the ultimate pressure and collapsed. It was repaired under direction of Major Glenn, the colonel's first assistant, but again on trial it was wrecked. For the third time the same result occurred and a fearful disaster in having Lake Superior pour through the unfinished canal and locks was barely averted. The situation was becoming critical by delay of the work late in the season. The directors became alarmed and the president called on them to meet him at the Sault. A conference with the government engineers was held when the latter said that in pursuance of previous agreement they had been in exclusive charge of the dam but were ready to confess that it was beyond their ability to make it equal to the trial tests, the difficulty being that the water under pressure forced channels under the uneven base and lifted the frame.

They had heard that the agent had remarked that he could solve the problem, but declined to act while it was in their control; they therefore requested the board to induce him to assume charge of it and they would hope for his success. The board immediately acted on the suggestion and in a private session found him quite willing to undertake the case when duly assigned to him. An official order to that effect was passed and he was then asked how long it would require to make it ready. He replied about one week and at an expense of but a few hundred dollars. As the government engineer had been engaged upon it for many months, involving an expense estimated at about $50,000, these predictions seemed quite incredible, but the intensely interested directors decided to remain for that time and watch the new methods. The agent immediately caused the frame of the dam to be repaired and refilled as before,—then having bought the spare mainsails of several large vessels then unloading stone for the locks he had the same nailed on the top of the dam and their breadth carried up stream and weighted down in place by a few scow loads of gravel. Within three days full pressure was applied, but the dam remained firm and tight as a bottle. Work was then resumed with the agent in sole charge as chief engineer, with the government engineer corps most cordial approval. The directors departed feeling well repaid for their time and attention at the scene of operations. The colonel's official surveys were found to contain two serious errors: one was that he had established the depth of the canal to be 12 ft., as the law required, when the water of Lake Superior was a foot higher than usual, and subsequent observations proved that it would when opened only afford 11 ft. of vessel clearance. This discovery was made during the season of 1854 and, although the contractors might legally claim that the official data must be their acquaintance, the directors decided to have the intended depth actually realized, and accordingly the bottom from the locks to the lake was lowered 12 in. at great extra cost, as two-thirds of the distance was rock and the use of hand instead of power drills was required in the tedious scraping off of the 12 in. in depth over about

Generated on 2024-07-26 21:32 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY



LETTING WATER INTO THE POE LOCK 1896.

35,000 square yards of surface. At the same time the rough rock sides of the canal were faced with smooth walls, not called for by the contract, on the slope required by the specifications but which experience proved should have been made perpendicular which has since been done. The permission to use cheaply built lock gates was waived and a much more expensive plan voluntarily adopted with a hand windlass power which remained in successful use for a third of a century, whereas the cheaper official plans were vastly inferior if not impracticable.

But the most serious error was not ascertained until navigation in 1854-5 had closed; then it was discovered that a reef beyond the coffer dam at the pier entrance to Lake Superior above the falls was solid rock in place instead of sand as indicated on the government chart. A dredge had been provided to remove the supposed sand but as to the rock it was utterly powerless. The ledge tapered from 1 in. to 3 ft. in thickness and covered an area of 100 ft. wide by 300 ft. long, or over 3,300 square yards. Unless this was removed the state authorities could not accept the work, and if the canal was not finished by May 19, the next spring, the time specified in the contract, the latter could be attacked as invalidated and the selection of lands then made including over 600,000 acres of selected pine lands in the lower peninsula, in addition to those reserved for mineral values in the Lake Superior district might be adjudged illegal and thrown open to public entry. When, therefore, the agent-engineer reported the discovery of the rock ledge to the president and directors at Albany by the late November mails which required several weeks in transit, a meeting of the board was called, and the agent's letter asking for instructions was anxiously discussed. The Michigan legislature was about to convene and it was decided to apply to it for an extension of time, but the situation had become widely known, the disappointed land speculators saw a chance to recover lost ground, political influences were brought to bear, until it became evident that such extension could not be obtained. Then the president called the most eminent engineers of the country to meet the directors in consultation at Albany including the Hon. W. J. McAlpine and Hon. John T. Clark, both having been the state engineers of New York and the former having had the honor of selection by the Austrian government to advise as to the improving of the sea entrance of the great River Danube.

The conclusion of the engineers was that a new coffer dam would be necessary, requiring the next season for construction operations and a heavy outlay of capital. Later letters came from the agent asking what the directors had decided upon and closing with the remark that in the absence of specific instructions he might proceed to experiment as to ways and means for removing the ledge. To this the vice president as one of the consulting engineers replied stating the gist of the professional discussions and referring to the agent's suggestion of experimenting himself, informed him that the board urged his doing so and had appropriated $30,000 to cover his expenses if required and if he failed no censure would result. At this juncture all overland mail communications were suspended by the spring thaws and freshets. The directors heard nothing more from the Sault and decided to go there by the first steamer. The season being a late one that steamer did not pass through the St. Mary's river until May 10. Besides the president and directors the two engineers first named were retained to accompany them to advise as to the coffer dam, it was expected must needs be built. A desperate legal contest relating to the land entries was anticipated and the market value of the Construction Co.'s stock had fallen to 50 per cent. below par.

Generated on 2024-07-26 21:32 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Leaving the directors and engineers on board the steamer nearing the Sault a narrative of the agent-engineer's proceedings for the previous few months will be first presented. After weeks of study on the problem he decided in January to build what he styled a "steam punch." No machine shop existed within 400 miles and only snow shoe trail led away from the location. The machine must be made there in an ordinary blacksmith's and carpenter's shop. To make the desired forging a bar of 4 in. square steel was tapered to a tempered point 1 in. square; then rings were made of increasing sizes and welded around the bar and fused together until a solid mass was shaped 2 ft. or more long, swelling from the inch square point to 16 in. diameter at the upper end. A large freight steamer happened to be at the river dock for winter quarters which had wrought iron blades to its propeller wheel. The stern of the steamer was raised out of water and two of those blades removed. One was welded to the butt end of 16-inch diameter punch, forming a "thimble" flange to it. The other blade was used to make a thimble which fitted inside of the other and into this the end of a stick of white oak timber about 30 ft. long and 14 in. square was fitted. Then key holes were cut and a heavy wedge key inserted which passed through both thimbles and held the massive metal punch firmly attached to the timber shaft. To give more gravity to the same, tram car axles were bolted in grooves cut on its four sides until the aggregate weight of the punch equalled some 3 tons.

The shaft was then fitted with guides into the frame of a pile spile driver on a scow and connected by rope and pulley with the drum of a portable steam engine suitably placed on the scow, the "drop" was about 15 feet, including the required water channel depth of 12 ft. A gauge was marked on the timber shaft and to sink the same to the water level the punch must go a foot below the required bottom level.

Reels were placed in the scow working ropes whose ends were attached to the opposite pier—a turn on the reels moved the scow 18 in. side ways so that in that space the solid punch must sink to nearly its own diameter in the rock to bring the mark on the shaft to the water level.

But the time of trial of the machine did not arrive without serious mishaps. The first was peculiar; the agent was a strict Sabbatarian and no unnecessary Sunday work was allowed or pay authorized therefor. When the agent's plans for the punch were made manifest the skilled workmen employed, knowing its importance, took great interest in its being perfected and expedited. They decided that its great prospective utility warranted Sunday labor upon it, and they concluded to club together and work upon the punch forging the next Sunday without pay and surprise the agent by completing it earlier than he expected. After working all day and late into the night they adjourned to the regular morning hour, but by some unknown means the shop caught fire in the night and little more than the unfinished punch removed. A more pertinent set of men were seldom seen. The most serious loss was that all large bellows on the works were there destroyed. To get a suitable fire to manipulate the forging all had been placed in a battery to produce a sufficient blast and must be duplicated or the plan abandoned. A team and driver were at once selected to take the cashier with funds to buy large bellows wherever the same could be found, and as the nearest settlements likely to have them were at the saw mills scattered along the Canadian shore of Georgian Bay, there the messengers went and after traversing hundreds of miles on the ice returned in about ten days with six or more bellows of suitable size; soon therefore the punch was completed.

It was rigged into place, but on the first drop the side of a boulder in the channel was struck a glancing blow which broke the timber shaft short off at the socket and the punch had to be fished out of the channel bottom! Boulders were then grappled for and the few found removed. When the punch commenced regular work three screws working 8 hours each kept it operating without cessation night and day except Sundays, rain or shine, for several weeks. It gradually advanced from the thin edge at the lake entrance to the thicker portion nearer the coffer dam. The canal prism meanwhile being finished the agent opened the dam sluice gates and let Lake Superior flow in on the 19th of April, and the dredge which was a horse power antiquated affair the first of the "Osgood pattern" used on the Great Lakes, was employed in removing the same. Then it was ordered to get behind the punch and test its results. The agent engineer sat on the pier opposite and waited developments. Several times the scoop came up empty, and his heart almost stood still; he then directed the operator to draw the scoop back to the utmost limit and put on extra holding power. The old dredge creaked and twisted as though it would go to pieces, but when the scoop came up it was full to the brim with broken stone. Then the agent sprang to his feet, swung his hat and gave three cheers. The problem was solved. After the dredge had broken a "face" across the channel the work was as easy as if the ledge were sand. Not a piece of rock came up as large as a man's hand. The punch had pulverized the ledge quite below the required depth. By the 10th of May the channel was complete except some trimming along its edges.

Reverting to the directors then on the approaching steamer, they formed a solemn looking group on the forward upper deck as the steamer neared the dock on which they saw the agent waiting to receive them. Soon greetings were exchanged and eager inquiry made as to the state of the canal work.

"Oh," replied the agent, "that is now completed, only a few finishing touches are needed."

"Surely you do not include the rock ledge," said President Corning.

"Oh, yes, that is all out."

"You should not joke on so serious a subject," was the response.

"Oh," said the agent, "you are all evidently incredulous, come and see for yourselves."

Carriages were called and the directors and engineers rode along the filled canal to the Lake Superior entrance. The dreaded ledge furnished the material for a stone hillock some 30 ft. high next to the west pier. The party gathered near the punch and saw it strike blows of thirty or more tons to the square in. on rock 12 ft. below the surface with the utmost precision. Vice President Brooks turned and grasped the agent by both hands and exclaimed:

"My good fellow, there is not an engineer in the world but would be proud to point to such an achievement as this."

"We join in that opinion," responded Engineers McAlpine and Clark, who stood in the front rank of the profession, and found their abilities not required as expected.

The party returning to the village and thence to the agency where they were to be quartered, acted like a party of boys enjoying jokes and laughter. But the happiest person of all was Director Erastus Fairbanks, the senior partner of the famous scale manufacturing firm, who was later on governor of Vermont during the civil war. He first sanctioned the promoter's plans, invited the others to join in the undertaking, and when the directors met for the first time and held an executive session, in which the appointment of the general agent was discussed.

"Who knows about his financial ability?" was the inquiry generally made.

"My firm is willing to be his surety for $100,000," replied Director Fairbanks.

"That is sufficient," said they all.

The appointment was made and half that sum at once placed at the official's disposal, and his drafts for over $1,000,000, in-

Generated on 2024-07-26 21:32 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

cluding land department expenses, paid up to that time.

It was decided to send a special messenger at once to the governor to invite him to meet the directors and accept the work. He responded promptly and after inspection signed the official certificate, which was filed at Lansing on the 21st day of the month and the canal control and care then passed to the state and subsequently to the nation.

IN REVIEW.

The claim that this was the most honorably performed contract of its magnitude ever entered into with a state or national government is sustained by the following facts: 1st. The contractors could have obtained the same compensation by bidding for locks one-third smaller than they deemed the public interest required and as proved to be the case.

Second. They could legally have followed the government engineer's specifications and saved 1 ft. in depth along the canal.

Third. They could have built the lock gates upon the contract plans and saved a large percentage of expense but delivered a very inferior work.

Fourth. They added a slope wall on both sides of the canal where none was required. At a moderate estimate they increased the cost to themselves over 25 per cent, and thereby doubled the practical value of the canal to the state and the public for the next third of a century.

The following extracts from an address by Gen. O. M. Poe, the eminent engineer, who built the immense lock 100 by 800 feet now occupying the site of the original double locks as published in the Sault Association folder furnish remarkable evidence in the case:

"On the whole, however, the canal was a remarkable work for its time and purpose. The construction of the locks especially bore evidence of a master's hand in their design and execution, and it is no reflection upon the ability of the engineer in charge that experience developed the objectionable features enumerated above. These locks are now being torn out to make room for a new one, and every step in their destruction reveals the excellence of the workmanship, the honest character of the materials employed, and the faithful compliance with the conditions of the contract under which they were built, not merely in its letter but in its spirit. All honor then to every man connected with their design and construction. They were long in advance of their day, and if commerce had not outgrown their dimensions they would have done good service for a century.

"I must confess to a feeling of great regret that it has become necessary to destroy these first locks. Inanimate though they were, they seemed to appeal to every sentiment of respect. They had never failed to respond to any demand within their capacity; they had contributed, in a higher degree than any other one factor, to the development of the country to the westward of them, and having done such good work are now to be obliterated in the interest of that very commerce they did so much to establish. The man who, knowing their history, can see them go, without compunction, is made of other stuff than I am, and, if an engineer, has no genuine love for his profession nor pride in the achievement of those who successfully apply its teachings to the best examples of his art."

The claim that the work was the most economically and rapidly built of any equally important on record, is presumably proven by comparison with the Canadian canal on the opposite side of the river. That is of the same length and size of prism, but is 8 ft. deeper—or as 20 to 12. Its lock area 900 by 60 or 54,000 sq. ft., the state canal being 750 by 70 or 52,500 ft. (double lifts). Allowing for the increased depth of 8-20ths that proportion should represent an increase in cost of $400,000, or a total of $1,400,000. It was commenced in 1888 and opened for traffic in 1895, eight years. The state canal commenced in 1853, finished in 1855, two years; actual time 22½ months. The cost of the Canadian canal, by official reports, was $4,093,025.60, despite the radical improvements in work, machinery and means of access between 1853-85.

Scores of interesting incidents might be written as occurring in the early canal annals, but space forbids. As example, however, the following will be briefly stated: When the promoter explored the banks of the St. Marys river in quest of lock building stone in November, 1852, he hired a boat and crew of Philetus Church, the Indian trader on Sugar island. He crossed Lake George to look at the rock exposures at the Neebish rapids, and in stepping out of the boat on to the icy rocks, slipped and took a plunge into the deep and swift current. The boatmen were active in fishing him out and no loss of life occurred, but the ride back across the 8 miles of lake to "Churches" was a chilly one for him. Yet the warmth of his ardor for the new project did not get cold!

The agent-engineer used a mouse-colored pony to carry him about town and along the works, which had remarkable intelligence. It would stand for hours whenever left without hitching, but having been hit a few times by small stones when heavy blasts were fired, he would judge of the danger by the sound; for a loud nearby blast, it would give a spring, and start away at a rate that threatened destruction to the buggy, but at about a safe distance it would stop and remain stationary until its master appeared.

Wishing to arrange for some dimension timber at Pendill's saw mills, near the mouth of the Taquamenon river on White Fish Bay, 20 miles distant, the bay being covered with thick smooth ice, very glare at the time, the agent took the pony with sleigh after supper and started alone for the mill, expecting a three hours' drive. When about five miles out the pony cast off one of his fore shoes and soon after the other; and then could not stand up, much less travel. The agent found that by putting his arm around the pony's neck it could stand and walk very slowly, and was very careful not to tread on its master's toes. In this position they covered the other 15 miles, arriving at the mills towards morning, where shoes could be obtained. A case where in union there was "go!"

Referring to the coffer dam before mentioned. The vice president, Mr. Brooks, remained at the Sault after the other directors had departed, and was with the agent when a furious storm swept down from Lake Superior, and raised the waters above the falls some 4 ft. The waves swept over the dredge and sunk it with eight horses on board, some being drowned. When that excitement had subsided the two officials realized that the dam was in danger and on going to it were amazed to find that instead of its being 2 ft. above water a volume of 2 ft. deep was pouring over it. Creaking and twisting, the vessel mainsails still held it steady, but a few more inches pressure would evidently prove too much, and then a catastrophe would follow of vast proportions. The agent stuck his pocket knife blade to mark the height of water on the side abutment and there they sat silent and anxious beyond expression. The thrill of noticing by lantern light that the water within an hour had receded an inch and soon after, the storm abating, it ceased flowing over the dam, was like seeing the fuse light expire before reaching a dynamite bomb. Both had a sound sleep afterward!

The metal portion of the steam punch, which wrought salvation to the canal undertaking in 1854-5, is preserved and will doubtless be on exhibition at the Semi-Centennial celebration at the Sault in 1905. Its use saved the contractors probably $250,000 outlay in meeting the emergency.

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Before the Canal Was Built.

By Peter White of Marquette.

The American, the Northwest, and Hudson Bay companies, previous to the year 1829, had in their employ the following vessels: Invincible, Otter, Mink, Recovery and the Discovery. These were schooners varying in size from 20 to 100 tons burden, and all built on Lake Superior. The Invincible was wrecked on White Fish Point about the year 1822. The Discovery went to pieces in running the rapids at the Sault. The fate of the Otter is unknown. The Mink went ashore on the Canadian side above the rapids and was entombed there. The Recovery safely ran the rapids in 1829. She was purchased of the Hudson Bay Co. by Merwin & Giddings of Cleveland, O., and taken to that place and ended her days in Lake Erie. It is known that Bayfield, while making his survey of Lake Superior in 1823, had in his service a small vessel of about 20 tons burthen, and this was probably the Mink, furnished him by the Hudson Bay Co.

THE HON. PETER WHITE.

During the six years that followed 1829 the only vessels that navigated the waters of the lake were batteaux and bark canoes. In 1835 George W. Jones built above the Sault a schooner of 133 tons burthen and named her John Jacob Astor. She made her first voyage in August of that year under the command of Capt. Charles C. Stanard. He continued to sail her until the end of the season of 1842. The next year his brother, Capt. Ben A. Stanard, succeeded him in command, and he was on her when she was wrecked at Copper Harbor on Sept. 20, 1884. Stanard rock was discovered by Capt. C. C. Stanard in August, 1836, on his first trip over the lakes in the Astor.

The schooner William Brewster (named after the agent of the American Fur Co. at Detroit) was built for that company above the rapids in 1838. She was sailed first by Capt. John Wood, and he had command until the fall of 1841, when she was laid up at La Pointe. In 1842 Capt. Ben. Stanard fitted her out and ran the rapids at the Sault, thence to Detroit, where she died a natural death. She was a 75-ton vessel.

The schooner Algonquin of 50 tons burthen was hauled over the portage at Sault Ste. Marie in 1839 and made her first trip on Lake Superior in the opening of 1840. She was commanded successively by Captains Rockwood, Goldsmith, Smithwick and McKay. The last named was father of Capt. John McKay and Capt. George P. McKay. In the month of August, 1849, Captain McKay, with his schooner Algonquin, took on at the Sault a load of passengers and their luggage for Marquette. They were carpenters, laborers and masons from Worcester, Mass., under charge of Capt. Marble for the Marquette Iron Co. When the vessel had passed Laughing Whitefish point, it was a bright, clear day with a gentle breeze from the eastward. Capt. McKay said he had been into that bay many a time and it was no place to be with an east wind blowing. "There are sunken rocks; that bay is full on 'em," said he, so he ran up and landed them on the beach just above Little Presque Isle. They were about thirty-five in number and had a large amount of baggage, heavy tool chests, trunks, etc., all dumped on the sand beach. They were compelled to stay there over night and had neither bedding nor food. They reached Marquette the next afternoon, weary of life, indeed, having left all their baggage where it was landed. The Algonquin was sunk at the dock in 1856. Her upper works were removed, but the hull is in the bulrushes near Duluth yet. An endeavor was made to raise her in 1893 and send her to the world's fair, but it was abandoned.

The schooner Madeline, belonging to the American Fur Co., 20 tons burthen, was built at La Pointe in 1839. She was sailed by Capt. John Angus, and was wrecked at Isle Royal the same year.

The schooner Sis-co-wit, 50 tons burthen, was built by the same company at La Pointe, and was sailed by the same Capt. Angus. Years afterward she was owned by Capt. Bendry of Baraga. She took on a cargo of corn and oats at the Sault for Marquette in the month of November, 1849, and gave Marquette the cold shoulder by running straight through to L'Anse, or Baraga, and laid up for the winter. Capt. Sam Moody, accompanied by James Broadbent, went from Marquette to L'Anse on snow shoes. Arriving there they took forcible possession of the vessel, refitted her and sailed for Marquette on Christmas eve, arriving at Marquette on Christmas day with the mercury indicating a temperature of 15 below zero. It was a heroic feat. After her precious cargo was discharged Capt. Moody attempted to get her into the mouth of Chocolay river, but there was either not enough water in the channel or it was too cold and too much ice was in the way. She drifted a few hundred feet southeast of the mouth of that noble stream. That is what became of the Sisco-wit, sometimes spelled Sis-ko-wit.

In 1845 the following vessels were brought over the Sault portage on to Lake Superior: Schooner Chippewa, 20 tons, Capt. Thomas Clark, master and proprietor; schooner Florence, 20 tons, owned by Antrim & Keith, brought over on the Canada side and sailed by Capt. David Keith. Then followed the monster schooner Swallow, of 80 tons burthen. She was sailed by Capt. Smithwick and finally became the property of the world-renowned Capt. James Bendry of Baraga. He sold her after the canal was opened and she was thought to be too large for this lake; she was sent to the lower lakes. The schooner Merchant was next. She was of 80 tons burthen, was brought over the Sault portage in 1845, and was sailed in 1846 by Capt. Robert Brown. The compiler of these lines was at the Sault in 1847, and was very anxious to take passage on the Merchant for Copper Harbor, but was refused a passage because she was already overloaded with passengers. I have since ascertained that on her way up that trip she sprang a leak and sank off Grand Island, about four miles out, in 70 fathoms of water. Not a soul was saved. Passengers and crew are still in her hull and it is in fairly good order; at least this was the case when I looked at her in her last resting place a year or so since. It is only fair to explain to the reader that it was in a dream that I saw her. No other news of her was ever known after she sailed from Sault Ste. Marie that beautiful day in July, 1847.

The next vessel was the schooner Uncle Tom, 90 tons, sailed by Capt. John Angus. Her life on this lake was unprofitable and she was run over the rapids and to the lower lakes.

Up to this time none of these vessels had made any money for their several owners, unless, possibly, those belonging to the different fur companies had indirectly paid for themselves.

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

The schooner Fur Trader was brought over the Sault portage in 1845. Capt. Calvin Ripley sailed her. About this time the great copper excitement sprung up, and the Fur Trader coined money from the start. She was a great favorite, always lucky, and never had an accident. She was a favorite passenger craft, even "later on" when there were a few steam vessels on the lakes. "Old Rip," as the captain was called, was a great joker. He was for many years after a pilot on different steamers that came on Lake Superior.

THE FIRST STEAMER ON LAKE SUPERIOR.

The first steamer put on this lake was the propeller Independence of about 280 tons burthen. She was put over on ways in the summer of 1845 and made one trip that fall as far as La Pointe and then returned and laid up at the Sault for the winter. Capt. Averill was master and part owner. Her career was a checkered one. She was full-rigged like a vessel and had a powerful steam engine, but she was always in trouble. Neither wind nor steam, nor both, would make her go right. In the summer of 1849 she had made but one trip when she went ashore high and dry in Eagle Harbor. It was a year before she got off, and I think it was in the summer of 1850 or '51. She had left the Sault for up-lake ports, and when only a mile out her boiler burst and she was rent into ten thousand fragments. Jonas W. Watson was clerk of and on board of her at the time. He said he went up in the air about 150 ft., and as he saw a bundle of hay passing he seized it and came down with it, so that he was not injured. So methodical was Mr. Watson that when about to go up he seized the ship's books and papers, which were of great value and saved them.

In the summer of 1845 the schooner Napoleon, of 120 tons burthen, was built at the Sault. She was sailed by Capt. John Stewart. In the winter of '48-'49 she was overhauled and changed into a propeller. She did a good business until the completion of the Sault canal, when she went to the lower lakes. She was first commanded by Capt. Thomas Clark, and subsequently by Captains Ripley, Redmond Ryder and John Frazer.

In the autumn of 1849 the side-wheel steamer, Julia Palmer, 280 tons burthen, belonging to Capt. W. F. P. Taylor, came to the Sault and the following winter was rolled over the portage, and was launched in Lake Superior in the early summer of 1847, and during that season was at first under command of Capt. J. J. Stanard. Later on Capt. Sam Moody was her master. At the end of her first season she was "laid up," never to go out again. Her machinery was taken out and she was towed to Waiskia bay and used as a wood dock.

THE FATE OF THE JULIA PALMER.

On the last trip the Julia Palmer ever made she was at one time fourteen days out of sight of land, and a perilous time had those on board of her. In the March (1889) number of the Magazine of Western History is an article on the "Bench and Bar of Duluth," and in the sketch of Daniel G. Cash is a vivid and very interesting description of this trip of the Julia Palmer well worth reading.

The next craft to be hauled over the portage was the schooner George W. Ford. She came over in the summer of 1850. She was owned and sailed by Capt. John Parker. Capt. Parker had been a pilot on the lake for many years and was a good sailor, a careful manager, and under him she made money.

I have said the propeller Napoleon came out in June, 1849. On her first trip she sailed into Marquette (then called Carp river) and came to anchor a little over four miles east of the dock now occupied by F. B. Spear. She brought quite a number of passengers and a large amount of freight for this place. The passengers begged Capt. Clark to "heave anchor" and run a little farther up into the bay, but the proud autocrat of the propeller Napoleon swore, raved and stormed, striding his decks in the wildest excitement and declaring that if other people had no regard for the safety of his boat and passengers, he had! He had explored every square yard of that bay a thousand times and found it full of sunken rocks! No, sir! No sane man would ask him to endanger the safety of the boat by running into that bay.

The next steamer was the fast sailing, staunch upper-cabin propeller Manhattan, 380 to 400 tons burthen, commanded by Capt. Caldwell. She was brought over the portage and put on Lake Superior in the interest of Spaulding & Bacon, later on Spaulding & Childs. The Manhattan's Lake Superior career began in 1850 and lasted until she went ashore and was wrecked in trying to enter the Grand Marais harbor (below the Pictured Rocks) in the summer of the year 1858. In her day she was a faithful and useful craft. In June, 1851, the propeller Monticello was brought over the portage by Col. Sheldon McKnight. Col. McKnight had owned or controlled the Independence and the Napoleon, and now the Monticello was brought out to throw the opposition boat, the Manhattan, into the shade. Capt. John Wilson sailed the Monticello. A fierce war of rates on passengers and freight commenced, and bitter feeling ran very high between the two lines. In the month of August that year a collision occurred between the Manhattan and Monticello. It could easily have been avoided, but each boat was bent on destroying the other. The Manhattan was cut down and sunk near Parisian island. No lives were lost. Mrs. A. R. Harlow was a passenger on the Manhattan when the disaster occurred. The latter was resurrected and reconstructed in six weeks' time and out again. On her first reappearance at Marquette a deputation of young ladies, dressed in pure white, marched in procession down to the head of the Cleveland dock, bearing in their hand bouquets of the choicest of our flowers (of that day) and one of them a splendid flag made by themselves. Capt. Caldwell, a weather-burned, scarred, baldheaded, blunt, yet modest, sailor, was notified that his presence was desired at the head of the dock. He promptly complied with the request for his presence, bringing the handsome Tom Redington, his clerk, and the diffident "Ad. Lewis," his steward, along to protect him against any violence from shore lubbers. To cut a long story short, one of the young ladies advanced and presented the "stars and stripes" to the captain. He was more than astonished; for once he was nonplussed. Then the party sang a song composed and set to music for the occasion (the subject being "The Manhattan"), and a high-flown old gentleman (Dr. Livermore), mounted the old cast iron cylinder that stood there so many years and read some high-sounding resolutions, eulogizing the Manhattan and ending in a long speech full of the clink of "anvils," "the glow of forge fires," "the buzz and din of machine shops, saw mills, etc." (not a word about railroads), and winding up with the prophecy that Marquette was to be the greatest place in the world. The captain remarked that he "hadn't no doubt on it." Here are two of the twelve resolutions adopted and read at that time. The iron works referred to were those of the Marquette Iron Co. and the Jackson Iron Co., both of which failed afterward:

"Resolved: That in our opinion Marquette has become a place of business and resort sufficient to warrant its being made a stopping place by all boats on their upward as well as their downward trips, and that the time is not far distant when the commercial business, growing out of these rich and inexhaustible mountains of iron, will alone require more shipping than at this time floats upon this lake.

"Resolved, that in our estimation those iron companies who have been pioneers of operation here, and who have had incredible and unforeseen difficulties, disappointments and misfortunes to grapple with, are deserving of a favoring and fostering consideration, and it is a source of much gratification that the smoke of their fires and clink of their hammers give

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

indications that days and years of prosperity are in store for them."

After all, the Monticello was the most popular boat that had been on the lake up to that time, but without doubt was cracked through her keel from stem to stern at the time of the collision, for on the 25th of the same month, after coming out of Ontonagon, she was discovered to be making water very fast, and a gale of wind blowing, her fires were put out by the water rising to her furnaces, and she went on the rocky coast about 20 miles above Eagle river and rapidly went to pieces. Several passengers were lost, but many were saved. The then editor and proprietor of the Lake Superior Journal, J. Venen Brown, was one of the saved.

The next steamer was the splendid two-piped, upper cabined, side-wheel steamer Baltimore, put on by the McKnight line. She was put across the portage in the months of June and July, 1852, and was commanded first by Capt. Jack Wilson, then by Redmond Rider, Capt. John Shooks, and finally by Capt. John Reed, who lost her in the summer of 1855, her last trip on Lake Michigan, she having passed through the canal, just then completed.

The propeller Peninsula was the next steamer placed on this lake by the McKnight, or Chippewa Portage, company people. She was put over the portage in the winter of 1852-53, was launched this side in April, '53, was commanded by Capt. John Reed, and was wrecked the same year at Eagle river. She did not carry passengers to any extent, but was a large freight carrier. The one-piped side-wheel steamer Sam Ward was brought over the portage by Capt. E. B. Ward in the spring of 1853. (The canal was finished and opened in June, '55). The Sam Ward was commanded by Capt. Easterbrook. She was a very popular passenger boat, and paid for herself two or three times over before the canal was opened.

OPENING OF THE ST. MARY'S FALLS CANAL.

When the canal was completed in 1855 there came the large steamers Illinois, Capt. Wilson (the first to pass up through the canal); North Star, Capt. B. J. Sweet; Northener, Capt. Ed. Turner; Lady Elgin, Capt. Thompkins; the old Superior, Capt. Jones; also the propellers Gen. Taylor, Mineral Rock, Northern Light, City of Superior, Lac La Belle. The three last named were all successively commanded by Capt. John Spalding. Capt. Ed. Turner commanded the Northener, Iron City and last the Ironsides. Capt. Ben Wilkins, who afterward sailed the Winslow for many years, first brought out the propeller Ontonagon. The steamer Illinois was in the year 1868 transformed into a barge, later the Mineral Rock took the same course, the North Star was burned at her dock in Cleveland in March, 1862, the Northener was lost on Lake Huron in 1858 by collision. The Lady Elgin was lost on Lake Michigan by a collision with the schooner Col. Cook, then owned the Augusta, and among the three hundred and odd souls lost at that time was the gallant Capt. Jack Wilson, who had sailed so many different steamers on the Lake Superior route. He was in command of the Lady Elgin and through his heroic exertions many lives were saved. He could easily have saved himself, but would not at the cost of losing others who had trusted themselves to his care and skill. The Superior was wrecked on the Pictured Rocks on the night of Oct. 26, 1856. She was in command of Capt. Jones, who had successively commanded the steamer Albany, the Peninsula and the E. K. Collins, and had lost the two later named and went down himself with the Superior.

The Superior was a very old craft, fairly rotten at the time of her loss, and should not have been permitted to carry passengers. She had a gallant crew. Twelve of the passengers and four of the crew were saved. It was a fearful story. Those who were saved caught on a shelf of rocks, under a high cliff, where with great difficulty they clung for five days without food. A snow storm was raging with great fury all the time and the waves continually washing over them. They saw the captain swim to the foot of the rock below them, but were powerless to aid him, and he was drowned in their sight. Eight of the strongest of the crew (the clerk, Henry White, and the steward, Sam Small, among the number), clung to the arms of the paddle wheel (the last remnant of the steamer remaining above water), and dropped off one by one as their strength gave out and they became unable to hold on any longer, and the last one had the watches and other valuables of the party on his person. All this was within 200 ft. and in plain sight of the party on the shelf of the rock. When the news came to Marquette a hurried public meeting was held, money and clothing were raised, and a relief party was dispatched to the scene of the wreck.

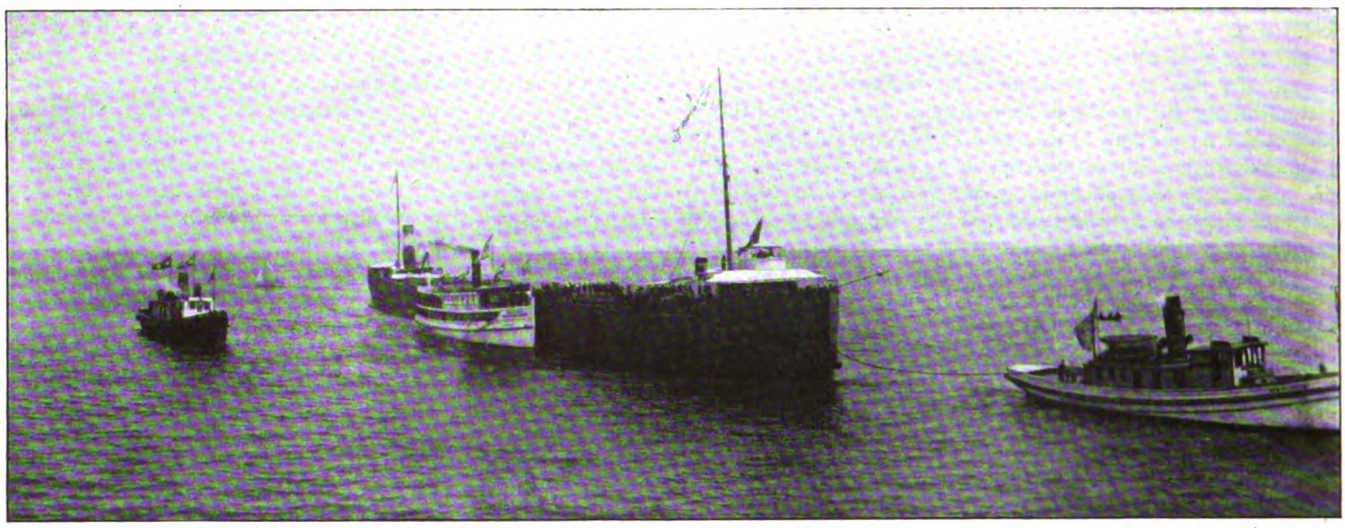
Steamers that I have not mentioned that were controlled by Sheldon McKnight, or the Chippewa Portage Co., and engaged in this trade were the Ben Franklin, London, Meteor, Pewabic; and by Capt. E. B. Ward, the Planet, Water Witch, Sea Bird; also the Traveler, Arctic and Cleveland of the John Hutchings line. Then there came the City of Cleveland, belonging to Bidwell & Banta of Buffalo; then the Ogontz, the old Michigan, the F. W. Backus, and so many others that it would be as uninteresting as useless to attempt to follow the chain out further.

POWER CANAL AT THE SAULT.

There is, however, another canal at Sault Ste. Marie with which the commerce of the Great Lakes has nothing to do. It is the great power canal which was completed in 1902 after four years of work and an expenditure of $5,000,000. It is regarded by engineers as one of the most magnificent works of its kind in the world. Like a river 220 ft. broad and deep enough to float any vessel on the lakes it divides Sault Ste. Marie into a city of two parts.

The canal is 2 1-3 miles long, from the mouth of the intake above the rapids to the overflow far below the entrance to the ship canals. The average width is 224 ft. and the depth is 22 ft. The intake has an area of more than 15,000 sq. ft., through which will flow a volume which is estimated to be 30,000 cu. ft. per second, with a velocity of about 2 ft. per second, or about 1½ miles per hour. The entrance is 801 ft. wide and 18 ft. deep. In its excavation some 300,000 cubic yards of material were removed. At a point about 1,000 ft. east of the entrances the intake merges into the canal proper, the dimensions of which are outlined above. A cross section of the canal at this point measures 4,425 sq. ft. For a distance of 4,100 ft. from this point the canal is cut through solid rock. In cutting out the channel through this rock formation the sides were first cut out by channeling machines. The rock was then drilled, blasted and excavated and the sides wherever rough were smoothed off with Portland cement. The bed was similarly finished. The immense labor necessary to accomplish this can be scarcely comprehended. The appearance of the canal bed, before the water was turned in, was as smooth as the exterior of a stone building. For the balance of the distance the canal tranverses a formation of sand, gravel and clay, the excavation of which was not attended by such difficulties. From the point where the rock formation leaves off to the entrance to the power house the sides and bottom of the canal have been planked with the best hemlock timber to be found in northern Michigan. At a point above the water line the timbering ceases, and the remainder of the sides is paved with rock. Above that the banks are beautifully sodded, and a row of trees, planted at the company's expense, borders each side of the great waterway. The object of planking beneath the water is to reduce the friction, thus securing as large a fall as possible at the point where the water power is secured. The lower 3,000 ft. of the canal is on a continuous curve of about three degrees. The construction of the portion of the canal which

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY



RECEPTION TO THE WOLVIN ON HER FIRST VISIT TO MILWAUKEE.

[*Arranged by Milwaukee Western Fuel Co.*

traverses earth necessitated the removal of 1,500,000 cubic yards of material, and 15,000,000 ft. of lumber were used in the flooring and sides of the canal.

The canal in its course through the city crosses thirteen streets, and at the present time is spanned by six steel bridges. At the lower end the canal widens out into the forebay, or millpond, for the purpose of securing sufficient frontage for the uniform distribution of the water to all of the turbines, which are installed along the river face of the forebay in the power house. Because of this expansion the water issuing from the canal will at once disperse and enter the turbines at a velocity of 2 ft. per second. The river front of the forebay is closed by the power house, the duplicate of which cannot be found in the United States. It is constructed of red sandstone, is 48 ft. over a quarter of a mile in length, is 100 ft. wide and 125 ft. high. The massive building sets upon a foundation of piles covered by log sills and caps, and covered with Portland cement concrete to a depth of 3 ft. The cost of building this foundation alone represents a snug little fortune. The substructure consists of eighty-one masonry walls 100 ft. long, 20 ft. high and 3 ft. thick. The stalls or pits thus formed, aside from supporting the building, serve to deliver the water from the turbines into the river. The penstocks are all of uniform dimensions, 40 ft. long, 15 ft. wide and 20 ft. high. The dynamo floor occupies space on the same floor on the river side of the power house. The floor above is used for the machinery, which converts the energy of the water into electrical power. The energy to be developed by this immense engineering achievement is estimated at 40,000 H. P., developed by 320 turbines. Four of these turbines in pairs are placed in each penstock. All of the turbines are joined to one high shaft of pressed steel. Thus the power is produced to turn the dynamos awaiting on the floor above. The electrical equipment of the power house consists of eighty dynamos. After converting the water power into electrical power the latter will be transmitted by feed wires to the doors of the various plants, which are either in course of construction or projected, and which are expected to use the power produced. Among other things, the power will be used to light the streets of the Sault and to propel its street cars.

An interesting side feature of the canal is the big movable dam constructed at the head of the canal to control the volume of water. This was built by the Detroit Bridge & Iron Co., and the completed structure, it is estimated, represents a cost of not less than $100,000. The dam is made up of four "leaves," 50 ft. long and 28 ft. high, suspended from and operating between piers and solid masonry. When the water is entering the canal freely these leaves are suspended, and when it is desired to stop the flow the leaves are lowered against a sill in the canal bed. Still another interesting feature is the ice rack, which occupies a space just at the entrance of the forebay. This is designed to intercept the ice, logs or other obstructions which may find a way into the canal and divert them into a spillway through which they are conducted into the river.

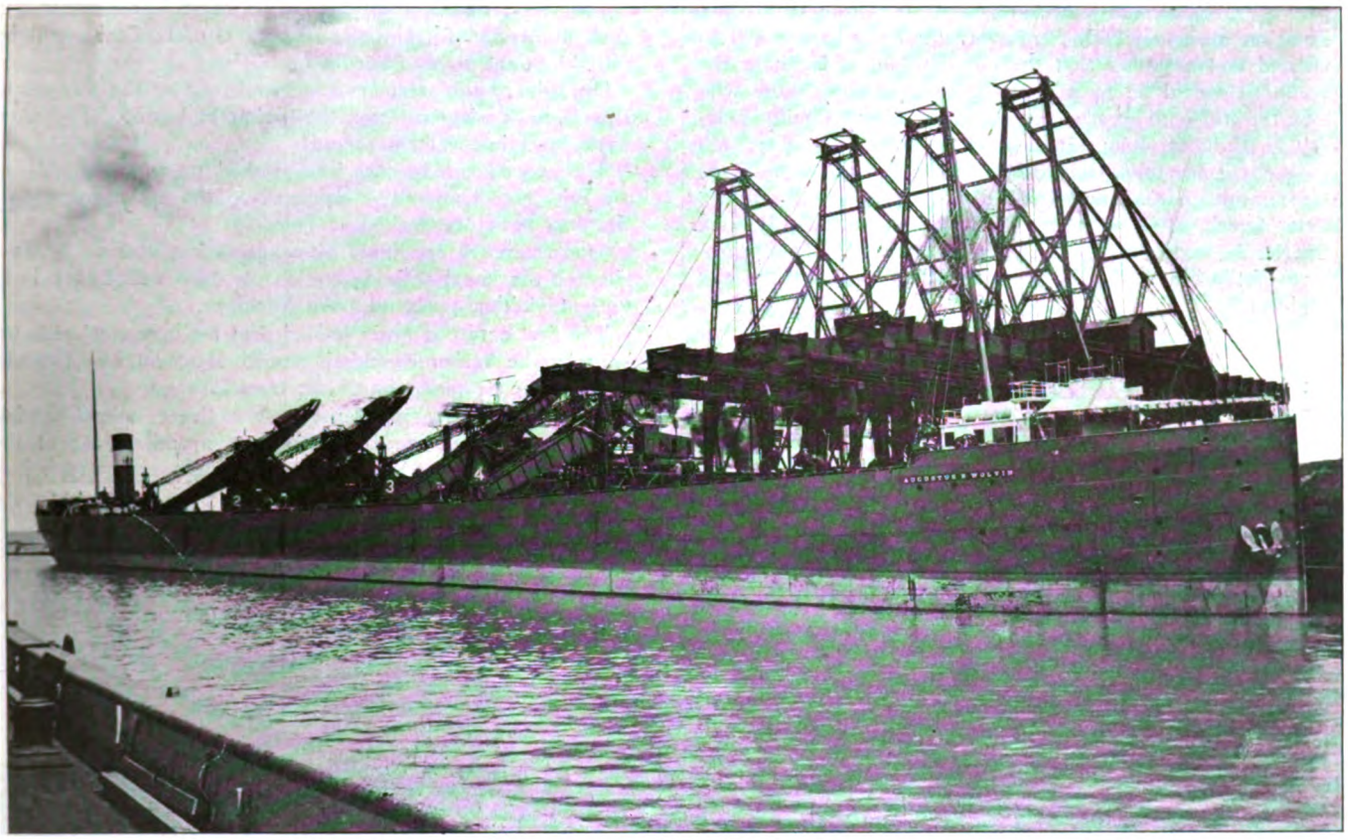
One of the serious problems which confronted the engineers in planning the canal was the question, the effect of opening such an immense waterway would have upon the level of Lake Superior. Upon this problem the opinions of the very best engineers in the country were secured, and the result was the construction at the head of the rapids of what are known as "compensating works." To compensate for the loss of water caused by the opening of a new outlet from Lake Superior which would discharge 30,000 cu. ft. per second twenty-four hours a day, 365 days in the year, a submerged weir, or dam, built upon timber cribs secured to the rock bed of the river, filled with concrete with the weir of concrete upon this foundation, was constructed. These compensating works are located at the head of the rapids, just west of the international bridge.

WOLVIN'S UNLOADING RECORD.

Unusual interest attaches to the unloading record established by the giant steamer Augustus B. Wolvin at Conneaut last week. It is not likely that the record will be disputed for some time to come. The actual time the Wolvin was under the unloading machines was 4 hours and 30 minutes, or from 7:22 A. M. until 11:52 A. M. The average time that the four Hulett clamshell machines were working upon her was 4 hours and 6 minutes, during which time they took out 7,257 gross tons of ore. The average time that the Brown electrical machines were working upon her was 3 hours and 41 minutes, during which time they took out 2,688 gross tons. The maximum amount taken out in any one hour was 681 tons by the No. 3 Hulett machine.

During this time fifty men were employed in the hold of the ship working the ore away from the sides of the vessel in order to facilitate the unloading buckets. For the first three hours these men had practically nothing to do, as the buckets were operating in sufficient ore to get full loads, but the contract provides that the men shall be employed during the entire operation of unloading. Their work was practically confined to the last hour when the ore at the sides of

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY



UNLOADING 9,945 TONS OF ORE FROM THE AUGUSTUS B. WOLVIN IN 4 HOURS, 30 MINUTES.

the vessel was shoveled under the hatches. This record, established by the Wolvin, is by far the best record yet obtained on the great lakes. Last year these four Hulett machines took out 5,200 tons of ore from the steamer James H. Hoyt in 3 hours and 52 minutes, but on the Wolvin, as noted, they discharged 7,257 tons in precisely fourteen minutes more time than that allowed the Hoyt's cargo. The following table shows precisely what each machine accomplished in this remarkable unloading record:

HULETT CLAM SHELL MACHINES.

Machines	Tons	Time	
		Hours	Minutes
No. 1	1654	4	17
No. 2	1636	3	55
No. 3	2089	4	03
No. 4	1878	4	08

Total tons, 7257. Average time 4 hours, 6 minutes.

BROWN ELECTRICAL MACHINES.

Machines	Tons	Time	
		Hours	Minutes
No. 1	625	3	30
No. 2	717	3	50
No. 3	769	4	04
No. 4	577	3	19

Total tons, 2688. Average time, 3 hours, 41 minutes.

The Wolvin unquestionably is the best advertised product ever put out by a lake ship yard. She has really received a publicity that is world-wide. On the present and opposite pages are given views showing the steamer establishing her record discharging cargo of ore at Conneaut and also discharging her record-breaking cargo of 10,769 tons of anthracite coal at the Kinnickinnic yard of the Milwaukee Western Fuel Co., Milwaukee, Wis. She arrived at Milwaukee on July 2 with this cargo of coal and was given a great reception by the Milwaukee Western Fuel Co., being escorted into the harbor by a fleet of tugs. This single cargo of the Wolvin, as cards issued by the fuel company show, was equal to 423 cars of 25 tons each or fourteen trains of thirty cars each, reaching a little over three miles.

IMPROVING THE RIVER AT CLEVELAND.

On Thursday of last week a number of vessel owners and city officials made a tour of the river in Cleveland above the Superior street viaduct to ascertain what might be done toward relieving the congested conditions obtaining there. Lake traffic has grown prodigiously during the past few years and the vessel itself has grown in the endeavor to accommodate it. While five or six years ago the average size of the lake freighter was 2,500 tons, it is now over 5,000 tons. No improvement has been made in the river at Cleveland above the Superior street viaduct for several years and when two modern carriers are lying at opposite docks it is impossible for a third vessel to pass them. The result is that vessels have continually to shift while loading or unloading, which results in serious delay. Both the vesselmen and city officials are of opinion that the river could be advantageously and cheaply widened at various points, though at other points it would involve the expenditure of great sums of money.

However, there is one improvement which might be made that would greatly relieve the present state of affairs, and that is the exclusion of the passenger boats from the use of the river altogether. The sidewheel passenger boats, which are the common type on the Great Lakes, have enormous beam and take up almost as much room as two ordinary freighters. These vessels have to go above the viaduct for a portion of their freight and while they are lying at dock above the viaduct, there is little clear space left in the river. The passenger lines are quite willing to forsake the river altogether if provision can be made for them in the outer harbor. The eastern breakwater now projects about 1,000 ft. beyond Erie street and affords sufficient shelter for the passenger vessels to lie at. If the city would only make some inducement to private capital, docks would be constructed there and the

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

passenger business of Cleveland transacted from that point. The time must inevitably come when the outer harbor will be utilized and anything that the city can do to facilitate the use of it would be most commendable. Among those who took the trip on Thursday last were Mr. Harry Coulby, Harvey D. Goulder, John Mitchell, Henry Hawgood, Capt. W. C. Richardson, John Donaldson, Robert Logan, Capt. C. L. Hutchinson, J. C. Gilchrist, Will Murray, Phil Broderick, Peter Lynch, M. A. Bradley, T. F. Newman, N. G. Stanton, Charles L. Lapp, president of the city council; Mr. Springborn of the board of public service and Mr. Sturtevant, city engineer.

AROUND THE GREAT LAKES.

Waukegan harbor is being dredged to a uniform depth of 21 feet.

Capt. C. C. Balfour has been appointed master of the steamer Bransford.

The steamer George C. Markham, which was sunk at her dock at Marine City by the steamer Geo. L. Craig, will be raised by Capt. Reid of Sarnia.

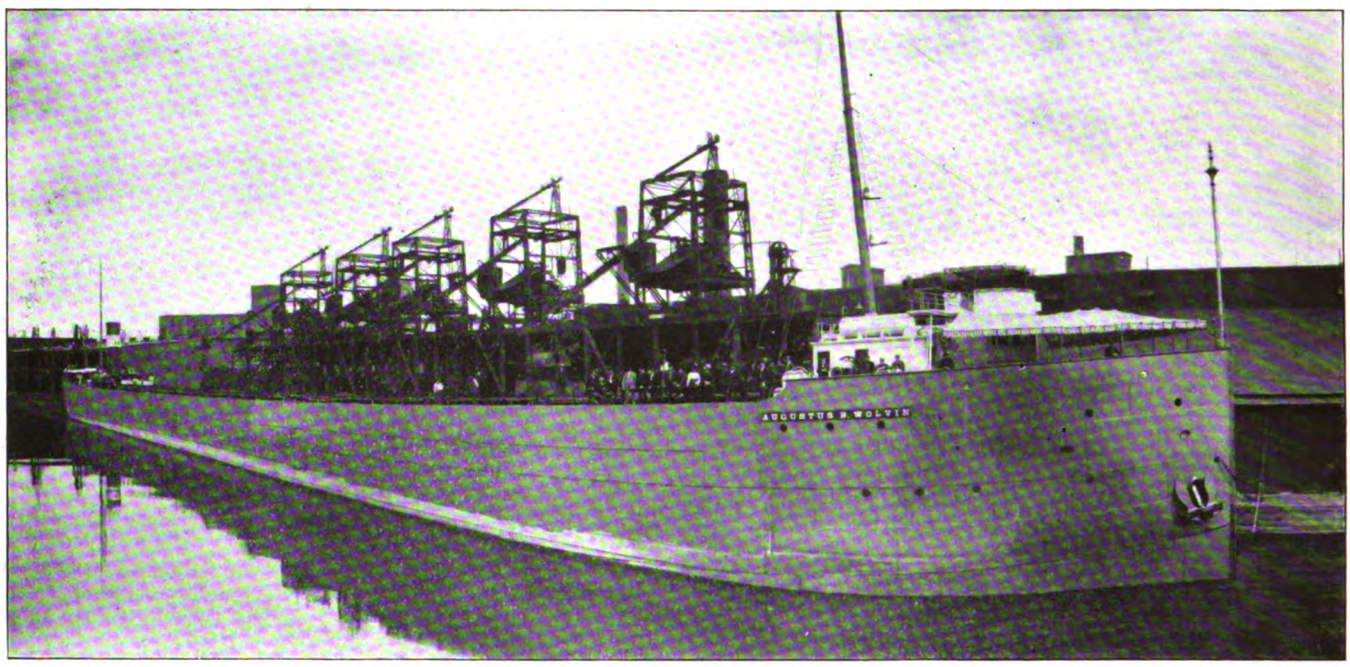
On July 27 the steamer Hope sunk one of the Breymann Bros.' scows when entering the harbor at Lorain. The scow went down in the main channel.

The propeller Markham was patched up and pumped out on July 29. The hull is damaged to the extent of $6,000. She had been dry docked at Toledo.

The committee appointed by congress last year to locate a site for the naval training station on the Great Lakes is at present visiting ports on Lake Michigan.

The first cargo of grain unloaded at the new steel elevator built by the harbor commissioners at Montreal was brought there by the steamer John Crerar from Chicago.

The tug Sheboygan, owned by the Great Lakes Towing Co., was badly damaged by fire Aug. 2 while lying at the dock in Toledo. The blaze started from an over-heated boiler.



UNLOADING THE WOLVIN'S RECORD-BREAKING CARGO OF 10,769 TONS OF ANTHRACITE COAL AT THE KINNICKINNIC YARD OF THE MILWAUKEE WESTERN FUEL CO., MILWAUKEE, WIS.

The steamer Eliza Strong has been libeled for $2,300 by the Buffalo Dredge & Dock Co.

The Canadian government has voted $28,000 to build a new breakwater and improve Toronto harbor.

The fireboat W. S. Grattan, Buffalo, will be out of commission for a time to undergo general repairs.

The new propeller Thomas Fowcett, built by Bertram, Toronto, has gone into commission at Kingston, Ont.

The car ferry Transfer will be given new steel docks at the Ecorse plant of the Great Lakes Engineering Co.

The Michigan Central car ferry transfer has gone into dry dock at the Detroit Ship Building Co.'s docks for a new shaft.

Sheboygan will have a new steel lighthouse within a month. It will be built at the easterly extremity of the north pier.

George Boneberg, a watchman, fell into the hold of the propeller Wilkinson and was killed by having his skull fractured.

The new drill scow and four drill frames ordered by Dunbar & Sullivan have been finished by the Great Lakes Engineering Co.

The tug John P. Hopkins was sunk in the Chicago river by a scow which had been torn from its moorings by the steamer New Orleans.

Capt. Hal Chamberlain of the steamer Umbria, of the Hawgood line, Cleveland, was fined $200 for failing to respond to the Neosho while the latter was leaving Duluth harbor on July 31.

While the steamer Sonoma was leaving Ashtabula in tow of a tug, in making the bend in the river, the stern swung around, striking the corner of the Kahne dock, doing much damage.

The big barge Pretoria of the Davidson fleet drawing 19 ft. of water grounded in the upper river at Cleveland this week. She had to be towed to the old river bed to be partially unloaded.

H. Corby of Belleville, Ont., has purchased the handsome steam yacht Siesta, which was used as the private yacht of F. H. Clergue during his management of the Lake Superior Consolidated Co.

Dr. N. P. Hulst, vice president of the Oliver Mining Co., which owns and operates the Norrie group of mines, says that he believes the total shipments of ore for this season will not be far behind those of 1903.

The schooner Duvall, with a cargo of building supplies, dragged her anchors off Middle island, Lake Huron, and had to be scuttled to prevent pounding on the rocks. She can be raised when the sea goes down.

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

The Chicago Lumbering Co., Manistique, during the week of July 28 sold the tug Evans and a dredge to Martin Bros., Oshkosh, Wis. The tug Evans is inseparably connected with the memories of the older residents of Manistique.

The schooner Franz Sidel wrecked off the Monroe piers last fall and since has been a dangerous obstruction to navigation, has been blown up with dynamite by the government engineers. The underwriters saved 400 tons of her coal cargo.

The propeller J. H. Reed went aground July 30 at Bar Point, mouth of the Detroit river, and five of her compartments were filled with water. The tug Colton and lighter Newman took 1,200 tons of coal out of her and she proceeded on her trip.

Of the five submarine torpedo boats which have been under construction at the Newport News Ship Building & Dry Dock Co.'s yards for the Lake Submarine Co. of Bridgeport, two were ready for delivery July 28 and the remaining boats will be shipped by Sept. 1.

The propeller John Sharples was tied up at Toledo on July 30 by a libel issued by Fireman Charles Ashwood, who demanded $20,000 damages. He claimed he was scalded by steam on the Sharples. The steamer was permitted to leave after bonds were given.

A large appropriation has been recommended to congress for the improvement of Manistique river and harbor. Should the government decide to expend a fair amount of money upon Manistique harbor that town would possess a harbor equal in safety to those of other cities of its size.

Col. Thomas W. Symons of the advisory board of consulting engineers of the 1,000-ton barge canal, says that the board is considering lowering the bed of the canal five or six feet between Tonawanda and Lockport and abandoning the present lock between Black Rock and Tonawanda.

Robinson Bros., of North Tonawanda, have closed a deal with western parties for 20,000,000 ft. of white pine lumber. The lumber will be taken to the Tonawanda port by the propeller C. H. Green and barges Genoa and Commodore. This is the largest lumber shipment to that port this season.

The owners of the schooner Thomas Gawn have sued the Gilchrist Transportation Co. for $3,000 for injuries received last November. While entering Duluth harbor in tow of the steamer John Harper, the Gawn ran into the canal pier and negligence on the part of the towing steamer is alleged.

It is said that the new Canadian cruiser James Turner, one of the ship yards at Barrow-in-Furness, England, for the protection of Canadian fisheries, will make Lake Erie beachers haste. On her trial trip the new boat showed a speed of 17 over a measured mile. The steamer will soon be ready to leave England.

United States local inspectors of steam vessels have suspended the license of Frank H. Ryerse, master of the tug Niagara, which was stranded June 4 on Knife Island, for ten days, beginning Aug. 1, for failure to report the occurrence according to the rules and regulations of the board of supervising inspectors.

Edward Hines of the Edward Hines Lumber Co. purchased 120,000,000 feet of lumber at Duluth lately and has negotiations under way for further extensive deals. He states that there is an increasing demand for sawmill products and that he anticipates no depression in business as the result of the presidential campaign.

The citizens of Tonawanda are circulating a petition to have adequate dockage for excursion boats at Goose island. The loading of excursion boats in North Tonawanda and the landing of excursionists after a day upon the river on unsafe docks at distant points a long distance from where the boats started causes much annoyance.

Capt. Fred Houghton of the steamer Reed, was arrested by the harbor master July 29 for refusing to shift his boat. Capt. Houghton says he was held here four days at the coal dock and was asked to let another boat take his place at the dock before his steamer was loaded, which he would not do. He had to pay a small fine.

The final adjustment of the losses on the cargo of the steamer F. H. Prince which was sunk by collision with the submerged crib outside of Cleveland harbor shows it to have been the heaviest loss of the season to marine underwriters. The Prince had a full cargo of rubber shoes and boots. The aggregate losses were $140,000.

Fresh proof was given to the new owner of the steam yacht Sapho, E. M. Lieblian, of her capabilities by her manner of breasting a storm July 21 on Lake St. Clair. At the time of the Cheboygan cyclone, when 200 buildings were overturned, the Sapho weathered the storm nobly. The yacht has been lately owned by Commodore Steffens, of the Chicago Yacht club.

The propeller Alva sailed from South Chicago on July 30 with 50,000 sacks of cement for Lake Superior. The cement was shipped by the Illinois Steel Co. and is the first large lake shipment of cement made since the steel company began manufacturing cement as a by product of its works. The shipment will be used by the government on breakwaters and piers.

Court Commissioner W. D. Thompson of Racine has issued an injunction against twelve union stevedores, restraining them from interfering with non-union men employed at the docks of J. F. Clancy & Co., in the unloading of vessels. Clancy refused to pay more than 60 cents an hour for trimming and the men finally named 65 cents, their price, having first asked $1.

James Prior & Son, Houghton, has contracted to do some work for the Ontonagon Lumber & Cedar Co. at Marquette, Mich. A slip 60 ft. wide and about 1,500 ft. long from the inner end of the government pier extending along the west side of the harbor to the bridge is being opened to a depth of 15 ft. When this channel is opened the lumber company will have an excellent opportunity to handle its lumber by water.

Congressman Burton, chairman of the house committee on rivers and harbors, accompanied by Congressman R. P. Bishop of Ludington and J. H. Davidson of Oshkosh, Wis., who are also members of the rivers' and harbors' committee, William Alden Smith, Senator Burrows and a committee from the Grand Rapids Board of Trade, made an inspection of the government improvements of Grand river on July 30.

Judge Seaman handed down an opinion in libel suit of propeller John Spry against propeller Colonial. The Spry asked compensation for services rendered the Colonial, which sprang a leak by colliding with ice at Squirrel Island, on December 17, 1902. It was proved that the boats made an agreement before they left Erie to assist each other in overcoming the difficulties of winter navigation. The suit was dismissed.

The little schooner-rigged gasoline launch Ida Caroline is quite a unique craft and intends to engage in the fruit business between Milwaukee and Michigan ports. She is the only gasoline launch registered at the Milwaukee district. She is a model of the ocean pilot boats, is 53 ft. in length, with a beam of 14 ft. Her capacity is 14 tons and her average speed is 10 miles an hour. The Caroline is owned by John Eagen of the Milwaukee cooks union.

The Lumber Carriers' association of the Great Lakes has just issued in book form a manual containing the membership list, the names of vessels and other interesting data connected with the association. It also contains the agreement with the locals of the International Longshoremen, Marine and Transport Workers' association, Masters' and Pilots, Engineers, Lake Seamen's union, Marine Cooks and Stewards' union. To Secretary Horace E. Runnels of Port Huron this complete little work is due. Cuts of some of the finest lumber fleets on the lakes form a handsome feature of the publication.

Generated on 2024-07-26 21:33 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Company,

CLEVELAND, OHIO.

CLEVELAND: WADE BUILDING.
CHICAGO: MONADNOCK BUILDING.
DETROIT: HAMMOND BUILDING.
NEW YORK: 150 NASSAU STREET.

Correspondence on Marine Engineering, Ship Building and Shipping Subjects Solicited.

Subscription, $3.00 per annum. To Foreign Countries, $4.50. Subscribers can have addresses changed at will.

The Cleveland News Co. will supply the trade with the MARINE REVIEW through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, Ohio, as Second Class Matter.

AUGUST 4, 1904.

The growth of our enormous iron and steel industries, which are pointed out as the result of our protective tariff, can be more surely traced to our enormous resources in the iron mines of Michigan, Wisconsin and Minnesota than from all other sources. The cheap production of the highest grade of ore in these mines and the low rates of transportation to Lake Erie ports have done more to build up the iron and steel industries of the United States than all the tariffs that have ever been placed upon the statute books, and today, if these mines were closed, our superiority in the iron and steel trade of the world would be gone forever.—J. J. Hill, President Great Northern Railway.

It will be observed that the present issue of the Marine Review has to do with the canals of Sault Ste. Marie, the largest in point of commerce in the world. It is scarcely to be credited when one takes into consideration the enormous volume of traffic passing through them that they are not yet fifty years old. Indeed the whole Lake Superior country in a commercial sense is not much over fifty years of age. Mr. J. J. Hill, who is the author of many wise and pertinent remarks, never made a more truthful one than that which leads the present article. It is the great conjunction of iron in the Lake Superior hills with a matchless waterway of over 1,000 miles, linking the deposits with the furnaces of Ohio and Pennsylvania that has made the premiership of this country in the manufacture of iron and steel absolutely unchallenged.

These vast, and at one time supposedly inexhaustible deposits, were separated from the common center of the country's population by an insuperable barrier—the rapids of the St. Mary's river. Iron ore was discovered in the Lake Superior country in September, 1844, by Wm. A. Burt and his party of surveyors, but it was nearly twenty years later before it was profitably mined. The thought did not occur to the pioneers in the Lake Superior iron country to ship the ore to the furnaces of the lower lake states. They endeavored to smelt it into iron in little forges near the mines or on the southern shore of Lake Superior, using charcoal as fuel. This attempt to make iron in the upper peninsula of Michigan and to market it in Pittsburg involved all concerned in it in irretrievable ruin. Pig iron was bringing in those days about $70 a ton in Pittsburg, but the Lake Superior iron had cost about $200 a ton when it reached the Pittsburg market. Later the attempt was made to transport the ore but the obstacles surrounding this undertaking were practically insurmountable in a commercial sense. The first iron ore discovered lay fourteen miles from the shore of Lake Superior and owing to the fact that no roads existed which would bear a wagon it was necessary to transport the ore to the shore of the lake on sleighs during the winter time. If, by spring, not counting what had been consumed in the forges, a stock pile of 1,000 tons had accumulated on the little dock at Marquette, it was accounted a considerable amount. The ore was transported in little schooners from Marquette to Sault Ste. Marie where it was unloaded and hauled over the rapids by horse and wagon and reloaded upon another vessel for transportation to the lower lakes. Of course, its cost increased at every step of the way and by the time it was dumped on the Lake Erie dock it was a mighty expensive article. The ore was proved, however, to be of good quality, far exceeding in metallic substance any other American ores. The demand for a canal around the rapids of Sault Ste. Marie became clamorous but congress exhibited the utmost deliberation in acting upon the subject. It was not until 1853 that the construction of a canal was made possible by the granting of 750,000 acres of land in Michigan to any company that would undertake its construction. The story of the organization of this company is told elsewhere in these columns by the man who actually built the canal. The canal was 1½ miles long, 64 ft. wide at the bottom, 100 ft. wide at the water surface and 13 ft. deep. There were two tandem locks of masonry, each 350 ft. by 70 ft., having 11½ ft. on the miter sills and a lift of about 9 ft. each. These locks were opened to commerce on June 18, 1855, and were in continuous use until 1887, when they were destroyed to make room for the present Poe lock.

It would be tedious and probably uninteresting to encumber this article with the mere statistics of the commerce of these canals. It is enough to state that

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

during 1855, which was the opening year of the first canal, only 1,447 tons of ore passed through it, and it was not until 1884 that the shipments of iron ore through the canal exceeded 1,000,000 tons per annum. It was not until 1897 that they exceeded 10,000,000 tons per annum. In 1902, however, the iron ore shipments through the canal reached the great total of 24,277,555 tons, to which is to be added some 3,500,000 tons which were shipped through the straits of Mackinac. The commerce of the Sault Ste. Marie canals reached its high water mark in 1902 when the enormous total of 35,961,146 tons of freight passed through. During 1903 the movement was 34,674,437 tons. It is the prediction of those best informed that within a very few years it will have reached an annual total of over 50,000,000 tons. These figures are very significant by contrast. The total volume of freight passing between New York and Liverpool does not exceed 10,000,000 tons and that passing through Suez at the conjunction of three continents is not much greater than 10,000,000 tons.

It was not until 1862 that the iron mining companies of the Lake Superior region declared a dividend, however, once placed upon a dividend paying basis they paid handsomely year after year, and are today among the soundest of the country's enterprises though, of course, reckoned in proportion to capital invested dividends are not as great today as they were during the period succeeding the civil war. The first locks at Sault Ste. Marie continued to accommodate the entire commerce of Lake Superior until 1881, when the Weitzel lock, named after the engineer that built it, was completed. This lock is 515 ft. long, 80 ft. wide in chamber, narrowing into 60 ft. at the gates and took ten years to construct. The Poe lock, 800 ft. long, 100 ft. wide and having 22 ft. of water on the sills, was built by the United States in the years 1887 to 1896 and took the place occupied by the original lock of 1855. Gen. O. M. Poe in demolishing this original lock to give way to the greater lock demanded by commerce paid as tender a tribute to an inanimate thing as has ever been put into an official report. A third lock is now in contemplation, to be the largest of all, and it will doubtless be built before the present improvements in the connecting waters of Sault Ste. Marie canal are finished. The Canadian canal, 1⅛ miles long, 150 ft. wide and 22 ft. deep with a lock 900 ft. long, 60 ft. wide and having 22 ft. to the miter sills, was built on the north side of the river between the years 1888 and 1895.

These locks with the projected one will undoubtedly accommodate the commerce of Lake Superior for a great many years, though it is expected that before the third lock is finished the freight movement will have grown to the great total of 50,000,000 tons. When it is remembered that the bulk of this freight is iron ore which is to be worked into every conceivable implement of civilization, the industrial future of the United States seems well assured for industrially considered, iron ore is the most valuable of all metals since directly and indirectly it gives employment to a fair proportion of the whole population.

The steamers Minnetonka and Minnewaska, built by the American Ship Building Co. in 1902, were sold at public auction at the office of the Citizens Saving & Trust Co., Cleveland, on Saturday last. Mr. G. W. Cottrell of the law firm of Hoyt, Dustin & Kelley, bid both ships in at $425,000 for the American Ship Building Co. It was previously announced that no bid for less than this would be accepted and Mr. Cottrell was the only bidder. The two ships were built for the American Navigation Co. by the American Ship Building Co. The ship building company, however, held all the bonds of the navigation company. The Minnetonka and Minnewaska are duplicates and are each 450 ft. over all, 430 ft. long between perpendiculars, 43 ft. 7 in. beam and 33 ft. depth of hold. They were built for ocean service and, of course, being in excess of Canadian canal dimensions were constructed in two sections, towed through the canal and put together at Quebec. Owing to the depression which exists in the shipping trade and the unequal conditions under which ships of Amercian register must operate in this trade in competition with foreign ships, it was found absolutely impossible to run the ships profitably. After making one trip to Europe and one trip around the Horn to the Pacific coast both vessels were placed in ordinary in Brooklyn. The fate of these steamships is a mighty solemn fact and one of which the Mercant Marine Commission should take cognizance.

LEGAL STATUS OF PANAMA CANAL ZONE.

Comptroller of the Treasury Tracewell, in an opinion defining the authority of the Panama Canal Commission regarding disbursements and the relation of the canal zone to the United States, holds that, while the "general spirit and purpose of the constitution is applicable to the zone, that domain is not a part of the United States within the full meaning of the constitution and laws of the country." He held that until congress by express legislation shall have prescribed the form of government of the zone, the will and sound discretion of the president and his commission will control, subject only to the general spirit and purpose of the constitution, and the local revenues of the zone shall be handled in accordance with such rules as they may authorize. He holds it unnecessary to decide whether those revenues are in a general sense moneys of the United States, because they are not such moneys of the United States as are required to be accounted for to the treasury department. The comptroller also holds that the commission would have no authority to adopt a system of allotting pay to employes on the isthmus similar to that in use in the navy.

The Wellman-Seaver-Morgan Co. of Cleveland has been awarded the contract for building the great rail mill at the plant of the Dominion Iron & Steel Co., Ltd., at Sydney, N. S. The general arrangement of the mill will be similar to the one designed by this company for the Ensley plant of the Tennessee Coal, Iron & Railroad Co.

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

STANDARD BEATS HERRESHOFF'S LAUNCH.

At the power boat regatta held under the auspices of the Atlantic Yacht Club, Sea Gate, Coney Island, N. Y., on Saturday, July 30, out of seven entries but three boats reported to the committee as ready. Long before the time set for the start the spacious club house was filled with members and their guests, all anxiously awaiting to see the new creation of Nat. G. Herreshoff, a steam launch, which it had been claimed was a very speedy craft. Considerable interest was manifested in the Standard, Swift Sure and the Vingt et Un, all having been the center of interest among motor enthusiasts. The boats were placed in two divisions, the Standard and Swift Sure in the first division and the Vingt et Un in the second. The course was from off the Atlantic Yacht Club dock to Fort Lafayette, leaving it on the starboard hand; then to and around the bell buoy off Robbins Reef light, and thence back home, making ten nautical miles. This course had to be covered twice. There was a breeze of moderate strength from the southward and the tide was ebb, making the lower bay somewhat lumpy, but aside from this the conditions were of the best for the trials. The boats performed in a manner which brought brilliancy to what would otherwise have been a lusterless event. In the first division the boats measuring from 40 to 60 ft. on the load waterline were placed and in the second division boats under 40 ft. on the load waterline. Mr. E. A. Riotte steered the Standard; Capt. Nat. G. Herreshoff the Swift Sure and Mr. C. H. Hamilton the Vingt et Un. Each of the occupants of the boats wore oilers, and it was well that they did, for the spray at times throughout the contest completely covered the boats and all occupants were drenched. With the necessary warning signal given at 2:30 P. M. the Standard and Swift Sure were sent off. Both boats did considerable jockeying for the start. The Standard was the first to cross the starting line, doing so 15 seconds after the gun had been fired, followed by the Swift Sure some 27 seconds after,thus the time of the Standard on starting was 2h. 30m. 15s. and the Swift Sure 2h. 30m. 42s. The Vingt et Un had her own signals and crossed the line at 2h. 36m. 26s. Those who witnessed the race were highly gratified at the manner in which they speeded through the lumpy water. In the first round the Standard was seen leading and when she crossed over the line her time for the ten nautical miles was 28m. 52s. The Swift Sure 29m. 24s. The Standard's time equaling on an average of 20.75 knots or 23.86 land miles and the Swift Sure 20.37 knots or 23.43 land miles. It was indeed great speed and for the ordinary yachtsman would be considered quite speed enough, and in reality it was the best speed that has been shown in American waters, all things considered. The Swift Sure's turn was much better than that of the Standard, and this being realized by Mr. Riotte he was not going to be allowed to be caught, and the reserve speed of the Standard was called upon and she gradually increased her speed. The second round was made by the Standard in 27m. 58s. and the Swift Sure 30m. 12s. This was an average of 21.50 knots or 24.725 land miles for the Standard against 19.90 knots or 22.89 land miles of Swift Sure. The Standard averaged for the full course of 20 nautical miles 21.126 knots or 24.29 land miles and the Swift Sure 20.135 knots or 23.16 land miles. The Vingt et Un, without a competitor, covered the first round in 29m. 04s. and the second round in 28m. 50s. She made an hourly average on the first round of 20.62 knots or 23.71 land miles and on the second round 20.83 knots or 23.95 land miles, and for the full course 20.725 knots or 23.83 land miles, thus beating the Swift Sure over the course by 1m. 42s. The Standard measures 58 ft. 10 in. on the waterline; Swift Sure, 51 ft. and the Vingt et Un, 40 ft. In this race the horse-power of the engines was not considered and there was no time allowance. The Swift Sure was launched on July 26 and had been given one or two trials before taking her in tow of Capt. Herreshoff's steam yacht Roamer. She was towed down through Long Island Sound from Bristol, R. I., and while stopping at Port Jefferson, L. I., in some unaccountable manner the engineer of the Swift Sure twisted a valve on the launch's engine and a machinist was despatched for from the works at Bristol, R. I. He arrived and managed to make the necessary repairs in time to have the Swift Sure enter for the race

Capt. Nat. Herreshoff, when interviewed after the race, had no comments to make as regards the result of the race, but stated that next time he would try to do much better. Accompanying him throughout the race was his brother, Charles F. Herreshoff, besides the engineer. Her engine was of 100 H. P. The captain has a second high-speed launch which he intends entering in coming events which it is said is much faster than the Swift Sure. The summary of the race is a follows:

Atlantic Yacht Club, Sea Gate, Coney Island, N. Y., July 30.

Course, 20 nautical miles, twice around a course of 10 nautical miles.

First Division—Boats from 40 to 60 ft. on load waterline.

Boat.	Owner	Start H. M. S.	Finish H. M. S.	Elapsed time H. M. S.	Average knots	Statute miles.
Standard	E. A. Riotte	2 30.15	3.27.05	0 56.50	21.126	24.29
Swift Sure	N. G. Herreshoff	2.30.42	3.30 18	0.59 36	20.135	23.16

Second Division—Same course, boats under 40 ft. on load water line.

Boat.	Owner.	Start H. M. S.	Finish H M. S.	Elapsed time H. M. S	Average knots.	Statute miles.
Vingt et Un	C. H.Hamilton	2.36.21	3.34.15	0.57.54	20.725	23.83

ENGLAND RETAINS THE HARMSWORTH CUP.

The International motor boat race for the Harmsworth cup which took place on the Solent, England, on Saturday, July 30, was again won by England's entry, Napier Minor, owned and driven by Mr. S. F. Edge, winner of last year's contest. Breakdowns were by no means numberless. The entries consisted of eighteen boats in all representing England, Germany, France and America. Out of this number but nine could reach a sufficient degree of perfection to make the final preparations for the race, the outcome of lack of restriction of the most extreme and unreliable type of boats built. Out of this nine only six actually appeared, and out of this number but two boats, the Napier Minor and the French boat, Trefle-a-Quatre, made creditable records. In the first heat were the following: Challenger (American), Bayard (French), Napier II. (English). The Challenger was the first to cross the line, having secured a good start, but the Bayard fouled her propeller immediately, and it was nearly a minute before the Napier II. started across the line after the signal had been given. Thus the Challenger had a handicap on the Napier II. The Challenger had been running well, but when about one-quarter of a mile from the first outer mark—there being three to form a generous sweep of 150 yards—one of the forward cylinders of the Challenger began to miss explosion, and by the time the third mark was reached the four forward cylinders were merely retarding the speed of the boat. It was but 30 seconds after passing this latter mark that the Napier II. caught up with the Challenger and passed her and increased her lead to the finish line. The course was 7.7 knots, and including her loss of time at the start, her time was 25m. 10s., averaging about 21 miles per hour.

In the second heat the Napier Minor had a walk over, as there was no competitor; in the third heat the Trefle-a-Quatre did the same. In the fourth heat the contestants were the Napier II. and the Napier Minor. The former beat the latter by 19 seconds, her time being 24m. 04s. Just before starting on this heat the Napier II. had damaged her bow, and as she now had began to leak badly it was decided that the Napier Minor should be chosen for the final heat with the Trefle-a-

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Quatre. The start in the final was indeed one of the best that has even been made, there not being hardly a second difference between both boats. The Napier Minor secured the lead and soon distanced her rival and finished the course in 23m. 01s., averaging 23 statute miles per hour; the Trefle-a-Quatre time was 24m. 20s.

The Napier Minor's details on construction are as follows: She is 35 ft. long; 5 ft. beam; is constructed of three ⅛-in. skins of mahogany, with prepared linen in between each layer and is sewn together by what is known as the Saunder's patent system. She is partly decked and her machinery is protected by a movable whaleback and the engine carried well forward in the boat. The boat is divided into two compartments—the forward or machinery space and the after or passenger space, and a hood rises from the bulkhead and protects the passenger space entirely from the spray. The floor is fitted with gratings and the benches and seats, which are of mahogany, are all fitted with life buoy cushions and the boat made as comfortable and smart as a well-fitted yacht pinnace. In the forward part of the boat is the steering gear, and the whole of the actuating levers and movements, which allow the engine to be throttled down, or accelerated, or the propeller shaft reversed or stopped, and a bucket seat for the steersman to sit upon. This allows the man to have complete control of the boat. The hull is brightly varnished inside and the decks are white enamel, the sides being of gray enamel. The machinery consists of a Napier Minor marine motor, giving 80 B. H. P. A Napier special marine "metal to metal" clutch; a Napier special positive reverse gear and thrust block. The propeller shaft is carried by a light bronze bracket and passed through the boat through a bronze stern bearing, and the propeller is designed to absorb the whole of the power of the engine when running at a speed of 1,100 revolutions per minute.

THE ROCHESTER YACHT CLUB.

Among the foremost of the fresh water organizations, the Rochester Yacht Club stands pre-eminent. Located on the shore of Lake Ontario, at a place called Summerville, unrivaled for beauty of situation, is their new home. From small beginnings, after many struggles, but with the determination to make their club one of the leading, the officers and members have succeeded in placing the club in the foremost ranks in the yachting world. The commodious club house affords splendid facilities to its members, and even the non-sailing members find the club house no small attraction. On its broad verandas, enjoying a good dinner, a pleasant smoke or the cool breezes during the summer evenings will find many members and guests, and even the automobilists find it makes a capital resting place. The R. Y. C. prides itself on the fact that the "blue ribbon" of the island seas—the Canada cup—is possessed by them, having been won by the Genesee, one of their fleet. The reputation for keen sportsmanship of the members is an established factor amongst yachtsmen all over the country. The fleet this year has been greatly added to and the marked interest displayed in the motor boat assures some good contests before the season closes. Several speed launches and cruisers have been added and power-boat racing will be one of the fixed features of the club events hereafter. The interest in out-door recreation gives promise of many spirited contests, both sail and power, giving renewed energy and ambition to the officers and members to make the club still more prominent. The resident membership of this club now numbers 300 and the non-resident near 50. In the sailing fleet are some very fast boats, comprising seven cutters, twenty-one sloops, four schooners, two yawls, five cats and one lug. In the way of motor boats the club possesses three gasoline, five naphtha, four vapor and four steam launches. These will be greatly added to, as many have boats, both sail and power, well under way, and when the season closes, from all present indications, it will be voted the best in the history of the R. Y. C. The officers and committees are as follows: Commodore, Charles M. Everest; Vice-Commodore, William H. Briggs; Fleet Captain, Frank T. Christy; Secretary and Treasurer, Thomas G. Young; Corresponding Secretary, L. G. Mabbett; Measurer, William H. Pillow, Jr.; Fleet Surgeon, Dr. T. O. Tait. Directors—T. B. Pritchard, Charles Van Voorhis, W. G. Hull, Frank Ocumpaugh; Executive committee, commodore, vice commodore, fleet captain, secretary and treasurer, corresponding secretary and directors; house committee—On Cafe, Frank Ocumpaugh, chairman; Wilmot Castle and Charles H. Chase; property—W. G. Hull, chairman, J. J. Leary, L. G. Mabbett; regatta committee—Frank T. Christy, chairman, L. B. Jones, J. W. Robbins, C. Van Voorhis, E. C. Moore, J. A. Taylor, L. G. Mabbett; entertainment committee—George P. Culp, chairman, C. C. Nugent, G. V. Fleckenstein, T. B. Pritchard, W. L. Farley, C. H. Moore; delegates to L. Y. R. A., Charles Van Voorhis, F. T. Christy, T. B. Pritchard; alternates—C. F. Ames, F. A. Mabbett, W. J. Graham.

ARROW BEATS ASBURY PARK.

The high-speed steam yacht Arrow, owned by Mr. Chas. R. Flint of New York, has of late been giving some exhibitions of her speed. On July 18 in an exciting race (for the few minutes it lasted), between the Arrow and the new Sandy Hook steamer, the Asbury Park, which has been greatly improved, and is now the fastest boat in the fleet, the Asbury Park left her dock on schedule time at the foot of Rector Street, when the Arrow started after her, passing the dock eight minutes later. The Arrow soon overhauled her, however, and passed her like an express train, continuing on to the Asbury Park's dock at the Highlands, arriving at the dock twenty minutes ahead of the Asbury Park, thus beating that boat twenty-eight minutes, which made the run of 20½ miles in fifty minutes, from which the terrific speed of the Arrow is evident.

On July 20 an impromptu race took place on Long Island Sound last week between the Arrow and the turbine steamer Tarantula, owned by Mr. William K. Vanderbilt, Jr., in which the Arrow won. When the Tarantula left her anchorage at Great Neck the Arrow rounded to in pursuit. As the Arrow burns hard coal it required considerable time to get fire full under headway, but she nevertheless passed the Tarantula within a very few minutes. The Arrow continued her great speed until off the New York Yacht Club's anchorage at East Twenty-third street, beyond which it was unable to continue owing to the crowded condition of the river. The Tarantula was credited on her official trial with a speed of 26.75 knots or 30.8 statute miles. The Arrow on an official trial achieved the remarkable speed of 39.13 knots or 45.06 statute miles.

WITH THE MOTOR BOAT BUILDERS.

The Pilots' association of Appalachicola, Fla., has lately been using the gasoline boat for the prosecution of their work and have found it capable of running out into the gulf in all kinds of weather. The Pilots' association of Fernandina also have recently equipped a large 55-ft. boat with a 30 H. P. Fairbanks-Morse & Co. gasoline motor, designed for a speed of 10 knots an hour. The boat is giving entire satisfaction.

The cruising launch Thistle, owned by James M. Thomson, South Lyme, Conn., was built by the New York Yacht, Launch & Engine Co., Morris Heights, New York, and is one of the most satisfactory launches in eastern waters. She is 55 ft. long, 10 ft. 6 in. beam and 3 ft. 4 in. draught. She is designed for a speed of 13 miles an hour.

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

IRON ORE SHIPMENTS VERY HEAVY.

The only hopeful feature of the freight situation on the Great Lakes is the growing firmness in the grain trade, though it must be admitted that when bushels are resolved into tons the grain trade does not amount to very much. Grain shippers, however, were on the market this week for tonnage at 1¾ cents from Duluth to Buffalo and 1⅛ cents from Chicago to Buffalo. The grain trade has shown a steady improvement during the past few days and even better rates than this are hoped for. For the rest there is not much to be said. Shippers are having trouble in keeping even the contract boats on ore busy and in a few instances have been unable to give them any cargoes. This is not saying, however, that the movement of ore is not large, because it really is, and the figures for the month will show that shipments have been very heavy. Ore sales are picking up a bit, not as much of course as the shippers would like, but sufficient so that some additional furnaces will go into blast within the next few days. Coal, however, has been rushed to the upper lake ports at a greater rate than could conveniently be cared for, and the Pittsburg Coal Co. announced that Duluth will be a closed port as far as coal is concerned for the balance of the week.

Information from Detroit is to the effect that the lumber carriers have decided to place one-third of their tonnage in ordinary. It has been known for some time past that the lumber rate was being shaded by the larger carrier, and it is expected that by sending a part of the tonnage to dock that the association rate of $2.50 can be maintained. The lumber movement has been quite heavy during the season and a great part of the total amount has already been brought down.

The season, however, will not be a profitable one for vessel owners, as carrying charges from the head of the lakes are 15 cents less than they were this year and there is no corresponding reduction in operating expenses. The same wage schedule is paid this year as last and the only concession is 2 cents per ton on the unloading charge.

RECEIPTS OF COAL AT CHICAGO.

The receipts of coal by lake at docks in the Chicago river during the month of July show that a decided improvement has been made in the traffic, and that it has attained greater proportions than the same month a year ago. Following is a comparative table showing receipts of coal this year and three years preceding.

	1904, tons.	1903, tons.	1902, tons.	1901, tons.
April	None	75,326	55,316	None
May	1,220	116,587	43,183	113,490
June	115,948	102,000	1,000	91,284
July	136,319	120,421	None	87,443

The table shows that the receipts of coal to date figure a total of 253,487 tons, as compared with 414,424 tons the same period in last year. Comparison with 1902 is not a fair one, as the strike in the anthracite fields was on at that time and very little coal was shipped. The showing this year would indicate that the movement will have to be large from now on to attain the showing made in 1903.

CHICAGO GRAIN REPORT.

Chicago, Aug. 2.—From improved tendency noted heretofore the outset of present week chartering restores market on trading level of 1 cent basis Buffalo corn. All water routing f. o. b. steamer Montreal at 3 cents corn, with demand New York and export, absorbs the balance of shipping attention. The New England call via Port Huron, Ogdensburg and Bay Ports, while promising, is still under somewhat dull pressure.

The expectations toward more profitable activity in vessel traffic dealing from about Sept. 1, aside from improved ore and coal outlook, finds encouragement through favorable account of growing crops and corresponding betterment in general cash grain position. The receipt of winter wheat and old corn at Chicago running in the near neighborhood of 1,000,000 and 2,000,000 bu. respectively within the past ten days. Local market prices of grain seemingly high and under excitable tone, but adjustment in values admitting of normal shipping movement must soon be determined.

Distribution of weekly lake and rail shipments as summarized below about as follows: Via all rail lines wheat 177,000 bu., corn 312,000 bu. and oats 670,000 bu. To Buffalo and other American points about 120,000 wheat and 1,300,000 corn; and to Canada points via lake, 120,000 bu.

LAKE AND RAIL SHIPMENTS.

	This week.	Last week.	Same week last year.
Wheat	298,335	108,950	96,855
Corn	1,812,047	1,183,885	1,102,632
Oats	671,292	724,888	1,066,174
	2,871,674	2,107,723	2,265,661

	Shipments since Jan. 1, 1904.	Same time last year.
Wheat	7,618,872	11,988,185
Corn	36,910,824	47,288,420
Oats	26,735,335	38,663,464
	71,265,031	97,940,069

STOCKS OF GRAIN IN ELEVATORS.

	This week.	Last week.	Same week last year.
Wheat	2,396,000	1,992,000	3,987,000
Corn	5,383,000	5,475,000	6,791,000
Oats	872,000	642,000	4,299,000
Rye	558,000	482,000	317,000
	9,209,000	8,591,000	15,394,000

MONUMENT TO WILLIAM H. MACK.

The monument erected near Chatham Light, Chatham, Mass., by Mrs. Margaret Mack of Cleveland, in memory of her son, Wm. H. Mack, who was lost off the Monomony and of the life saving crew who were drowned in attempting his rescue March 17, 1902, was unveiled last Saturday afternoon with simple ceremonies. The shaft stands 35 ft. high, overlooking the Atlantic and from its top can be seen the place where the disaster took place. The name W. H. Mack is in raised letters on the front and on the side are inscribed the names of the members of the lost Monomony crew and also the crew of the ill-fated barge Wadena. The dedicatory address was delivered by Rev. W. H. Malcolm of Cleveland.

STEAMER FOR WOLFE ISLAND TOWNSHIP.

There was recently turned out from the Bertram ship yard, Toronto, a new ferry steamer, the Tom Fawcett, of rather a peculiar build. She is 133 ft. long by 33 ft. wide, the great width in proportion to her length being on account of the service in which she is to be employed, which requires ample deck room for cattle, horses and farmers going to market. She is an iron-frame boat with 3 in. oak planking. Her engines are of the compound type, 13 by 26 by 36, with Scotch return tubular boiler 8 ft. in diameter by 9 ft. long. She has feathering paddle wheels. She was built to the order of the Wolfe Island Township Council and will run as a ferry between Wolfe Island and Kingston. The Bertram company is now building an iron ferry steamer for St. Johns, N. B., which will be shipped in sections.

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Merchant Marine Commission.

Seattle, Wash., July 27, 1904.—Four members of the commission appointed by congress to investigate conditions of the American merchant marine with a view to determining what, if any, government aid is needed to restore the shipping industry of the country, held sessions in Seattle yesterday and today, gathering information and suggestions from representatives of shipping interests and delegates from seamen's unions. Three sessions were held at which a number of papers were read and addresses were given, describing conditions as they exist, particularly with reference to the Puget Sound and Pacific coast districts. Varied suggestions were made as to the best ways and means for improving the American merchant marine.

The members of the commission who sat here were Senator Jacob H. Gallinger, New Hampshire, chairman; Representative Thomas Spight, Mississippi; Representative E. S. Minor, Wisconsin; Representative W. E. Humphrey, Washington; and W. L. Marvin, secretary of the commission.

The members of the commission arrived Sunday, July 24, and on Monday spent the day cruising about the Sound visiting the navy yard at Bremerton, the lumber mills at Port Blakeley and the shipyards at Ballard and Seattle. On Tuesday morning the actual work of the commission commenced. The facts and figures laid before the committee were extensive and varied, but the burden of all suggestions relative to improvement of the merchant marine, contemplated the granting of subsidies, permitting the merchant vessels to be operated under mail, transport and naval subventions. The organization of American sailors into a naval reserve force with compensation from the government was advocated as a measure that would improve the condition of the sailor and make his calling more attractive to the American youth.

Upon the opening of the first business session Tuesday morning, Frank Waterhouse, managing agent of the Boston Steamship Co., read a paper describing the condition of the American ship builder and American ship owner. Mr. Waterhouse's address was very comprehensive and will be given in full in a later issue of the Review.

In the discussion which followed Mr. Waterhouse expressed that in his opinion a subsidy would have to be a permanent one, but that it should be paid only for services rendered.

John P. Hartman, an attorney, stated briefly that he believed the consensus of opinion among Pacific coast shippers was that government aid should come in the form of subsidies for the use of vessels as carriers of mail, as transports and as auxiliary cruisers in times of war.

ADDRESS OF MR. FRANK W. HIBBS.

Frank W. Hibbs, manager of Moran Bros.' ship yards, read a paper in which he discussed causes for the decline of the American shipping industry and suggested remedial measures. The text of his address was as follows:

"Whatever may be the causes of the decline of the foreign carrying business of this country, and whatever may be the responsibility for or the bearing thereof, it must be acknowledged that the fact exists; that the flag of the United States is fast disappearing from the high seas; and that, judging from present conditions and tendencies, it will not be long before the American merchant marine will have nothing to identify it with its past greatness. To those who have an opportunity to observe these conditions this fact has been glaringly evident; and to others it is only necessary to study the statistics that have been published from time to time to be convinced not only of its existence, but of the impending doom of this once flourishing industry. This condition has not been reached without the warning of thinking men all over the country; the trend of the foreign shipping business has been made known over and over again for several years; and repeated attempts have been made to bring the state of affairs to the attention of congress with a view of securing legislative action that would result in gradually upbuilding the merchant marine.

"Although so far unsuccessful, the agitation of this question has served to bring it before the people; and it is believed that a thorough appreciation of the condition to be met cannot fail to bring about adequate measures of relief. It is hoped that the merchant marine commission, after securing statistics from all parts of the country, together with the opinions of those most conversant with the case, and by the authoritative statement of the conditions and needs of the American merchant marine which they will thus be enabled to make, may suggest to congress some positive scheme of legislation which will ultimately be effective in re-establishing American ships in the carrying trade of the world.

"We are told that years ago there was an American merchant marine of which any nation might be proud; more than that, that it was the greatest commercial fleet in the world; yet it takes all the faith of which most of those who have watched it for the past twenty years are capable to believe that statement; and there are those, principally foreigners, who try to say that the Americans are not a maritime nation, and who use that argument as an explanation of the decline of interest in American shipping.

"It is an axiom in business that an enterprise that does not attract capital is a poor investment; no amount of argument on earth could demonstrate otherwise; and, in spite of all the theory that can be advanced, there remains the fact that capital is being withdrawn from American shipping, with the inevitable conclusion that it does not pay. Conversely, if it were a paying investment, the most adverse circumstances and the greatest difficulties could not prevent the attraction of capital in its direction. It is not the difficulties to be overcome that determine men in attempting a venture; it is the probability of success and the reward. Once make the shipping business worth while, and there is no question whatever as to its fate.

"Herein lies the explanation of the decline of American shipping; it is not because the Americans are not a maritime nation, but because they are not enabled to compete with the foreigners in the carrying trade of the world, and are compelled to withdraw from the business.

"Your commission has visited all the principal ports in the east and has now an opportunity of viewing the commerce of the great Pacific. You cannot fail to see in our Pacific coast ports what are the ships that are handling our commerce. If you could but extend your travels to foreign ports, where there would be no possibility of coasting trade diverting your attention, it would require no statistics to demonstrate that American ships played no part in the world's commerce.

"It is calculated to humble an American's pride when he visits a large foreign port, teeming with vessels of all sizes and flying the flags of all nations, to see not one with the stars and stripes flying at her mast-head; and it is poor consolation to think that the reason for all this is not because his country has no foreign commerce, but because the foreigner has run the American out of business.

If any American can go abroad and see these things without deprecating them; if he can come home and ignore their significance, he has no pride of this country. In most men, they would stir up a feeling that any means would be warranted in placing the American flag again upon the high seas.

The United States *is* a maritime nation; the Americans *are* adapted to maritime pursuits, as much as any nation on earth;

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

and there is no reason why they should not at least carry their own commerce, if not that of other nations. It is weakness to point to the difficulty or to the expense of building up a merchant marine; and it is poor logic to attempt to prove that the re-establishment of this industry would not benefit all parts of the country. It is an exception where an undertaking begins to pay from the start out; in most cases money has to be put into a project for some time before it begins to pay; but the man who lacked the nerve to follow up his belief in an undertaking for this reason would deserve no returns. If effective means be taken to build up the American merchant marine, no one with any foresight and understanding can fail to see the ultimate benefit to every branch of industry and every port of the country.

A few years ago the United States had no navy. It had been allowed to dwindle away until it was ridiculous as to its numbers and as to the character of its ships; nothing but its former greatness remained. The average American could see no advantage of having a navy and particularly to expending any money for one. It could not possibly benefit any part of the country except the sea coast, and if worst came to worst, a gun on a raft manned by American seamen could whip the world.

"After the greatest possible effort, congress was induced to begin the rebuilding of the navy; it was good fortune rather than good management that placed this nation in a position to meet the emergencies of war. By that time, there was a navy that answered the purpose; it would have been far different otherwise. The achievements of the navy during the war with Spain brought it to the appreciation of the nation and it is to be hoped that its utility, demonstrated by the example, will be of lasting endurance. But aside from that consideration is the practical one that the upbuilding of the navy virtually started the steel ship building industry of the United States. The very existence of some of the American ship yards has been due to the encouragement offered by this government work. Who can say that this alone has not reacted to the advantage of the people?

"The building of a ship involves practically every trade and nearly all the materials and manufactures in existence. The work employs great numbers of mechanics of the highest skill and draws its materials from all parts of the country. How far reaching its influence is cannot be appreciated by those not familiar with its character; but it may be stated that there is no industry in existence which reaches a greater number of people and distributes its business more widely than that of ship building.

"Practically all of the large shipbuilding now being done in this country is on government vessels. In fact, it is questionable whether any of the large yards now in operation could continue, certainly not at their present magnitude, if it were not for the liberal policy of the government in building naval vessels; and the sudden cessation of that policy could not be regarded otherwise than as a calamity to the country.

"It requires large and very expensive plants to build war vessels, and if nothing be done to aid the merchant marine, which would have the effect of aiding the shipbuilding industry, the fate of this also would be a serious question; for it is not reasonable to suppose that the building of government vessels can continue indefinitely. No ship yard could think of laying down a plant for the purpose of building one war ship, or for the purpose of war ship construction alone, even if there were a probability of a continuance of such a policy for some time. The United States required war ships; a number of ship yards have at a great expense put in plants for this work and the government has been able to secure the ships that it needed; and not only that, but good ships, ships that are recognized the world over as the best in workmanship and efficiency. There is a certain responsibility therefore on the part of the government to back up these ship yards at the present time, before the utter cessation of government work, by such provisions as will enable them to continue on merchant work until the time when they can successfully compete with foreign builders and the ship building industry is firmly established in the United States.

"There is positively no reason why ship building should not become one of the greatest industries of the country. There are the raw materials in abundance; there is machinery; there is ingenuity, energy and capital; absolutely the only thing that is lacking is sufficient work to develop its possibilities. It is a fact that it costs in the neighborhood of 50 per cent more to build ships here than in England, depending, of course, upon the type of ship considered; but this does not mean to say that such would be the case indefinitely. England has been building ships under the most liberal policy of that government for many years, and American yards have never had an equal opportunity of demonstrating what can be done on a similar basis.

"Drawing a conclusion from many parallel cases, it may confidently be said that when American yards have been operating even a portion of the time that English yards have been, they will be able to build ships equally as cheaply if not more so. It cannot be expected, within any reason, that the spasmodic work that has been done so far could have any effect whatever toward cheapening such construction; but once enable the ship owner to lift the handicap of the greater cost of his ships built in this country, thus assisting in creating a demand for ships and putting into our ship yards continuous work for a few years, and the cost of ship building will decrease. If it be expected that any one act on the part of the government will either re-establish the merchant marine or reduce the cost of ship building at once, then there is no use in attempting a solution of the problem. Such changes can only come about gradually; but they are sure, if handled intelligently and with a steadfast determination in the right direction. It is only when, by continuous work, construction reaches the point of manufacturing that any material reduction of cost can be secured; spasmodic work tends rather in the other direction.

"A large and expensive ship building plant, the same as a large and expensive ship, entails certain fixed charges for interest, insurance, maintenance, upkeep and deterioration; and must be maintained in continuous operation in order that the influence thereof upon the cost of its product may be reduced to a minimum. This is simply an automatic way of accomplishing this result; but in addition, a large amount of continuous work gradually collects a corps of mechanics skilled in certain lines, systematizes all operations, standardizes the detail parts, permits the introduction of special tools, the numerous duplication of parts, the specializing of the branches of the different trades, and the highest development of mechanical ingenuity in simplifying design and construction.

"It is these conditions that enable the English ship yards to build cheaply and rapidly; they manufacture ships instead of building them; and when this is the case, it is even possible, by careful management, to meet the serious handicap of higher wages.

"This fact is exemplified in several well known instances where industrial work in other lines, differing but little from that of ship building, has been carried on successfully in competition with foreign builders; but one has only to go through the shops in which this work is turned out to understand how it is done. The American ship yards have never had an opportunity of developing the methods which conduce to cheapness; give them the chance and there is positively no question of the result. If therefore foreign nations find it advantageous and necessary to aid their shipping, taking into consideration the fact that their ships cost them less in the first place, then all the greater is the reason for aiding the American ship owner if he is to enter the same field of competition. As to the methods of aiding American shipping, it may be said

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

that the worse the malady the more strenuous must be the measures adopted for its cure.

"The American merchant marine is in a desperate condition; and desperate means would be fully warranted to place it on its feet.

"Half-way measures would be utterly wasted; a thousand dollars put into some projects would be a dead loss, where two thousand would bring handsome returns. What is needed now is something that will go beyond the limit of bare necessity in order to be sure of accomplishing the result; it is not good policy to take chances in this matter, which is of the greatest importance to the entire nation and to every individual thereof; nor is it good business, in such straits as we now find ourselves, to attempt to invent something new. We need a certainty, not even a probability.

"We have a chance to win out on the proposition of establishing the merchant marine on an equal footing with our competitors; and it must be borne in mind that delay only makes the problem more difficult by strengthening them and weakening ourselves; there is no time to waste in experimenting. We cannot do better than to employ the same weapons that others have used with much success; their methods are sure, even if we do not consider them logical; they may be expensive, but they will prove a good investment. Our competitors are in the field with large ships, fast ships, ships that will cost us more money to duplicate, and more money to operate; large fleets of ships with well established lines of business, and ships that are subsidized in every imaginable way. From a business standpoint the only logical way to proceed is to go straight to the adoption of the same system, and to go far enough to insure the growth and advancement of our merchant fleet.

"With a fair chance to compete on equal lines, we may safely depend upon the energy and genius of American ship owners and American ship builders to work this problem out successfully; they have done it before and they can do it again. By a judicious apportioning of subsidies the benefit can be made to reach all classes of shipping engaged in foreign commerce. It is not possible to make one subsidy reach all and the attempt to do so would not succeed; rather should there be one that could be reached by any one class. Foreign nations subsidize in several ways, and in many cases, one line of ships receives subsidies on more than one account.

What is needed at once is a subsidy that will aid in establishing or maintaining regular lines to foreign ports other where the greatest amount of our commerce is going, or where a good trade may be built up. There should also be subsidies for speed vessels carrying the mails, for the mails will always be carried by the fastest vessels; subsidies for vessels suitable for auxiliary cruisers in time of war, and subventions for vessels so fitted as to be suitable for transports of men and animals in the government service at other times. The establishment of regular lines of vessels on fixed routes is the only way in which a trade can be built up and this can best be effected by the general government; if, indeed, it is not the only way in which it can be done systematically. It is possible even, for one or two adequately subsidized vessels on a line to enable the owners to put in a fleet of vessels, which though not subsidized, hold and handle the growing trade produced by the regularity of the line and its direct routes to foreign ports.

One of the noticeable effects of ship subsidies is to change the character of the ships as to their safety, efficiency, seaworthiness and comfort. Where expenses have to be cut down to a minimum in order to operate without loss, it cannot be expected that the highest class of vessels can be used; and the ultimate effect of such conditions must show itself in the character of the ships themselves; for the value of the ship is an actual item in its daily operating expenses. It has been demonstrated that merchant vessels can be made effective as an adjunct to the army and navy in time of war; not only as auxiliary cruisers but as transports, dispatch vessels, repair ships, supply ships and colliers, but generally speaking they are a long way from being suitable for the purpose and cost too much and require too much time to prepare them so that they will answer the purpose.

"Yet it is possible in the original construction of a merchant vessel to make such provision for her conversion to war uses as will entail a minimum of expense and particularly of time. Consider what a powerful resource the government would have with a sufficient number of merchant vessels, subject to call under prearranged agreements, ready for immediate conversion in accordance with plans laid down at the time of their building, and on file in the department at Washington, to which their construction is thoroughly adapted without any subsequent preparation or extensive changes, and with the expensive part of the work already completed. And then consider the time when these vessels are returned to their former service without all of the work to do over again, duplicating the expense and more than duplicating the time of conversion.

"Examine some of the subsidized naval reserve vessels of England or Germany, with gun-foundations already to place and secure a battery of guns; with decks already provided for the reception of those fittings necessary to convey troops or horses; with coal bunkers and decks already arranged to give protection to the waterline, and with thorough and efficient subdivisions and watertightness. It is possible to go even farther in many ways than these nations have gone and to so build a merchant vessel that she will make a very efficient auxiliary cruiser, while at the same time not in the least interfering with her efficiency in her regular service. If this be not done it will certainly be necessary for the government to build ships particularly designed for the same purpose, and congress has already begun to appropriate for the construction of vessels on this line, for the ordinary merchant vessel is not capable, with any reasonable expense, of being converted into anything like what it should be for war uses. So that from a standpoint of economy alone, the government should be more than willing to pay the ship owner for building his ship to suit its needs and to hold her in readiness for its uses when required, particularly if by so doing it thereby takes an important step in aiding to build up the merchant marine."

VARIOUS OTHER SPEAKERS FOLLOW.

In reply to questions from the commission, Hibbs declared that there was no question in his mind as to the ability of the government to handle its supplies in subsidized merchant vessels, more cheaply than it can in regular transports.

"We will agree," said he, "to carry government supplies at a rate 10 per cent less than the commercial rate, if the government will subsidize American vessels and divide her commerce equally with them."

Edward Rosenberg, organizer of the International Seamen's Union, read a paper advocating an increased allowance of water on sailing vessels, more roomy accommodations in sleeping quarters and the granting of the right to sailors to quit ships in safe ports without their being liable to seizure of their bodies.

At the afternoon session John Rosene, vice president of the Northwestern Steamship Co., spoke of the possibilities of developing markets for American products in Siberia and eastern Asia, if the American merchant marine were only on a footing that would permit her to successfully compete with foreign vessels. He urged the possibilities of developing commerce in this direction, and the benefits to the producer as

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

well as the ship owner, as reasons why there should be government aid given to the shipping industry.

Dominick Kane, vice president of the Brotherhood of Boilermakers and Iron and Steel Ship Builders, advocated a protective tariff, placing a tax on foreign vessels engaging in American commerce, equal to the difference in cost of construction and operation of American and foreign craft, thus placing the former upon a footing with the latter without endangering the wages of craftsmen.

Gus Gustafson, agent of the American Association of Licensed Sailing officers, made a plea for a change in the law so that hereafter all sailing vessels of more than 100 tons burden shall be required to carry licensed masters.

Capt. James Griffith said he had been forced to abandon a project to operate a line of American vessels from Puget Sound to Mexico because of competition with a line subsidized by the Canadian and Mexican governments.

At the closing session today J. B. Meikle, secretary of the Seattle Chamber of Commerce, read a paper in which he reviewed the rise and fall of the American merchant marine. He told how the activity of American vessels in foreign commerce had gradually died away as the country has developed since the civil war, and how the coastwise trade has correspondingly increased. This latter development he attributed to the protection given coastwise vessels by the government, and the decadence of foreign shipping he attributed to lack of protection and aid. He advocated the subsidizing of American vessels engaged in foreign commerce and those engaged in the fishing industry.

G. E. Thorndyke of the Globe Navigation Co. read a paper describing the effects of competition with subsidized foreign vessels.

Captain Richard Chilcott, a promoter of navigation enterprises, was of the opinion that the payment of direct subsidies on a speed and tonnage basis, to all kinds of vessels, would not be satisfactory. He thought the government should pay to American vessels, 50 cents per ton for all commerce carried from an American port to a foreign country, and 25 cents per ton for all cargoes carried from one foreign port to another. He also advocated mail subsidies.

Capt. Robert McFarland, representative of the Everett Chamber of Commerce, believed that the government should create a naval reserve of American sailors and pay them for the privilege of calling upon them in times of war. He thought this would offer an incentive to young men to become sailors, and materially aid ship owners in operating their vessels.

The commission then closed its session and the members departed for Tacoma where their investigation will be continued.

SHIP BUILDING DURING JULY.

The bureau of navigation reports that 118 sail and steam vessels of 16,171 gross tons were built in the United States during July, as follows:

	Wood.				Steel		Total.	
	Sail.		Steam.		Steam.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	33	10,103	25	849	6	3,606	64	14,563
Porto Rico	1	15					1	15
Pacific	4	52	16	277			20	329
Hawaii								
Great Lakes	6	76	7	96	3	392	16	564
Western Rivers			17	700			17	700
Total	44	10,251	65	1,922	9	3,998	118	16,171

The new training ship Cumberland will be launched at the Charleston navy yard on August 17.

ITEMS OF GENERAL INTEREST.

The schooner Day Spring, of Benton Harbor, a lumber carrier, was totally wrecked Aug. 2 off Sylvan beach, Whitehall, Mich. The crew was rescued.

Fire broke out on the steamer Castanet, owned by the Capt. Visgars Steamboat Co. of Alexandria Bay, while touring from Kingston to Alexandria Bay recently. So admirably did the crew handle the steamer while running into shallow water that the passengers presented a purse of $50 to be distributed among them. The local inspectors, inspecting the boat, found her equipment to be in excellent shape.

When the Wolvin was at Erie on her latest trip the American De Forest Wireless Telegraph Co. equipped the steamer with wireless telegraph apparatus of sufficient power to receive and send a message over a distance of 250 miles. There are at present three wireless stations on the lakes, one at Cleveland, one at Chicago and the third at Buffalo. The Wolvin is the first freighter to be equipped with wireless telegraph instruments on the Great Lakes.

The Craig Ship Building Co. of Toledo has just completed and launched a beautiful 35-ft. yawl-rigged yacht for several members of the Chicago Yacht club. The boat has a steel hull, is equipped with an auxiliary gas engine, and has been named the Arcadia. The crew went to Toledo and started July 26 with her for Chicago. In the party were M. L. Baum, W. S. Huyette, Randolph Benson, L. Y. Coffin, E. B. Weber, Andrew Crawford, Wilbur Bassett, Busham Williver and Herbert M. Allen.

The hydrographic office at Chicago sent out a notice on July 30 to masters to beware of entering the gap in the harbor at South Chicago in the unfinished breakwater. The gap is marked by buoys. Lieut. Luby says that vessels should shape their course to arrive at a point two miles east of Chicago harbor light and then enter the harbor. On the end of the outer breakwater the contractors have placed two fixed red lights, 32 ft. above lake level, and 8 in. in diameter, one light being above the other.

The last 100-ft. crib which forms the foundation of the new government breakwater at South Chicago was put in place and sunk by the contractors last week. Several intermediate cribs are still to be placed, but the work on the outer extremity is to be hurried so that the lighthouse and fog signal which are to be at the end of the breakwater can be completed. The pier when completed will extend 6,900 ft. from the shore of the north side of the Calumet river and form a complete protection from north and northeast storms.

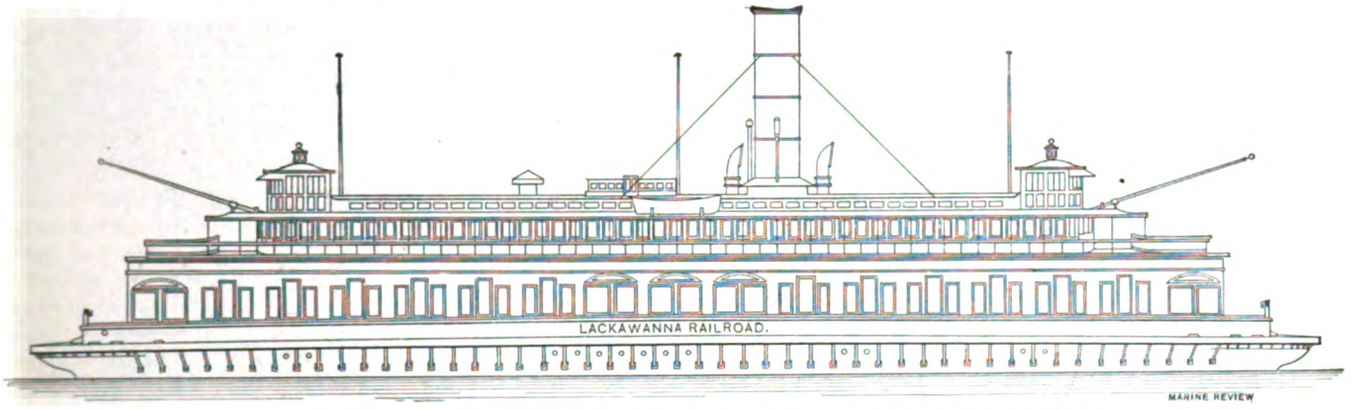
One of the most wonderful phenomena was witnessed by the officers and passengers on the North West on the night of July 22 on Lake Erie in the form of a rainbow. During the evening there had been a slight rain storm but between 9 and 10 o'clock the sky cleared, with the exception of a large bank of clouds to the north of the boat. The moon was shining brightly and on the clouds was a reflection describing an arch and which could only be described as a night rainbow. For beauty the phenomenon was unequaled. At the bases of the arch, along the horizon, there were several colors, while nearer the top the color was almost white.

The attorney general of Ohio has begun action against the Booth Fish Co. on the ground that it is an unlawful combination. The Booth Fish Co. was incorporated in 1898 with a capital of $5,500,000 and bought up all the fresh water companies in the United States. The company was able for a time to crush all opposition, but the field was too large for permanent suppression of individual enterprise and entered the courts seeking to enjoin those who had signed agreements from re-embarking in the fish business. Now the independents have issued proceedings against the Booths under the Sherman law, claiming that the combination is a conspiracy in restraint against trade and demanding that it be dissolved.

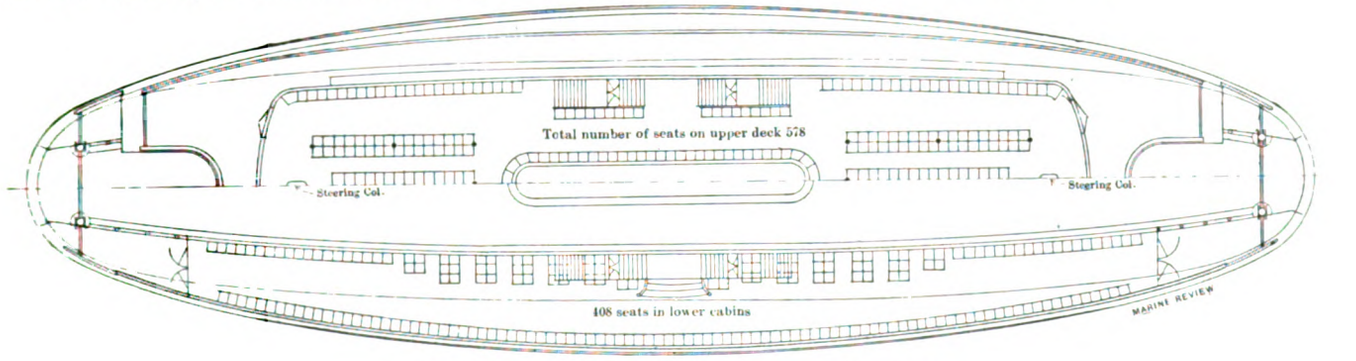
Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

FERRYBOATS FOR LACKAWANNA RAILROAD.

The Newport News Ship Building & Dry Dock Co., Newport News, Va., is progressing well upon the contracts awarded by the Lackawanna railroad for four large, steel screw, double-decked ferryboats, to be operated in connection with their new Twenty-third street ferry in New York harbor. As in the designs of the ferry terminal no expense has been spared by the Lackawanna road to make these new ferryboats a distinct advance over anything that has been attempted in the ferry service of New York. The new boats will have a length or 231 ft., a beam of 62 ft., a draught of water of 10 ft. 6 in. The plans show a boat considerably larger than the largest ferryboats now operating on the North river, designed with special reference to handling large crowds comfortably, and making regular trips through conditions of storm and ice. Special attention has been given to the sub-division of the hull by watertight bulkheads, so that in case of collision the safety of the public will not be endangered, and the boats will have the strongest construction ever used in ferry service in New York.



PROFILE OF LACKAWANNA RAILROAD FERRYBOATS FOR NEW YORK HARBOR SERVICE.



DECK PLAN OF LACKAWANNA RAILROAD FERRYBOATS

The general finish of the interior will be the Colonial style, with mahogany seats, stairs and trim, and white paneling. The floors of the cabins will be covered with a form of rubber tiling, and special attention has been given to the light-

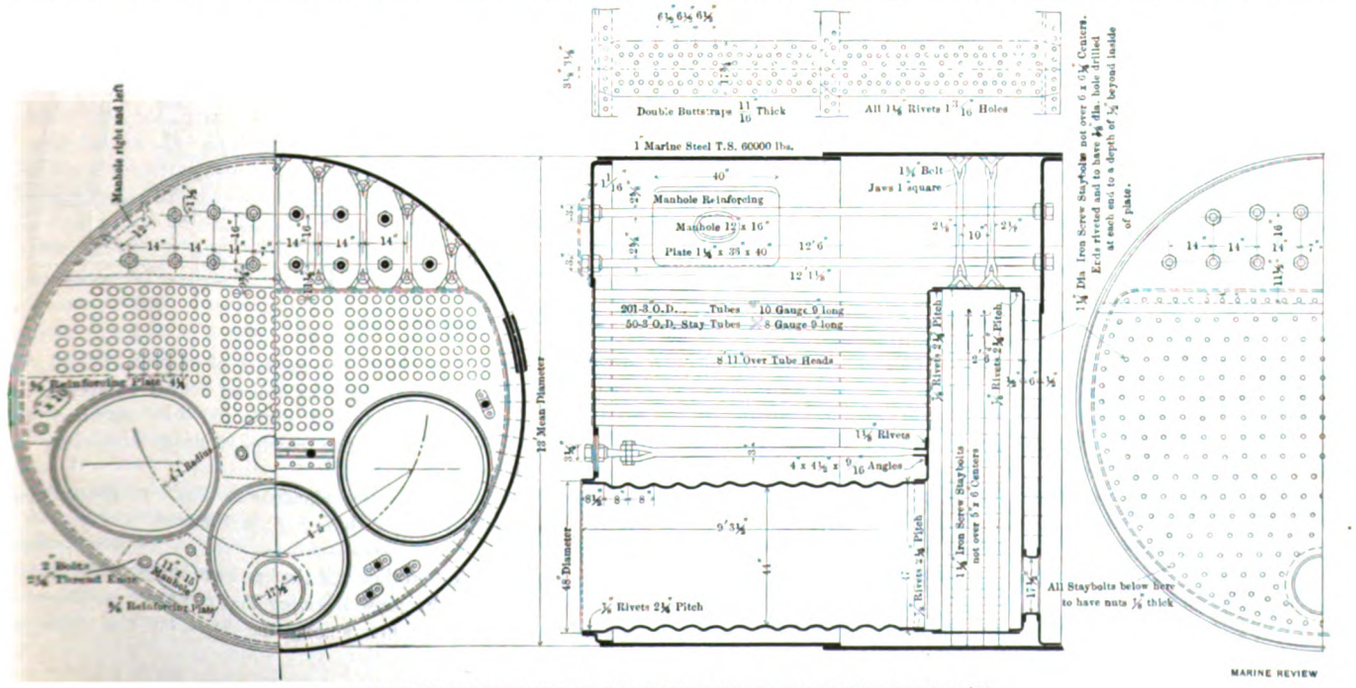

Double Butt Straps 11/16 Thick
All 1¼ Rivets 1 3/16 Holes
1 Marine Steel T.S. 60000 lbs.
Manhole Reinforcing
Manhole 12½ x 16"
Plate 1¼ x 33 x 40"
1¼ Belt
Jaws 1 square
201-3" O.D. Tubes 10 Gauge 9' long
50-3" O.D. Stay Tubes 8 Gauge 9' long
8'11" Over Tube Heads
1⅛ Rivets
4 x 4½ x 9/16 Angles
15' Mean Diameter
15' Diameter
1¼ Dia. Iron Screw Staybolts not over 6 x 6¼ Centers. Ends riveted and to have ⅛" dia. hole drilled at each end to a depth of ½" beyond inside of plate.
All Staybolts below here to have nuts ⅛" thick
MARINE REVIEW

DIAGRAM OF BOILERS OF LACKAWANNA RAILROAD FERRYBOATS.

Generated on 2024-07-26 21:34 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

ing of these boats, so that by day or night a passenger will be able to read a newspaper in any part of the cabins. The lower cabins will be finished with a syetem of cross seats on the inner side, and an attractive arrangement of arches, making an effect more attractive than that yet attempted in ferryboat service, and a special form of electric lighting willl be used, giving an even and diffused light. The upper cabin will also have mahogany and white finish, tiled floor, and a large seating capacity arranged so that in the whole boat one thousand passengers can be accommodated without crowding.

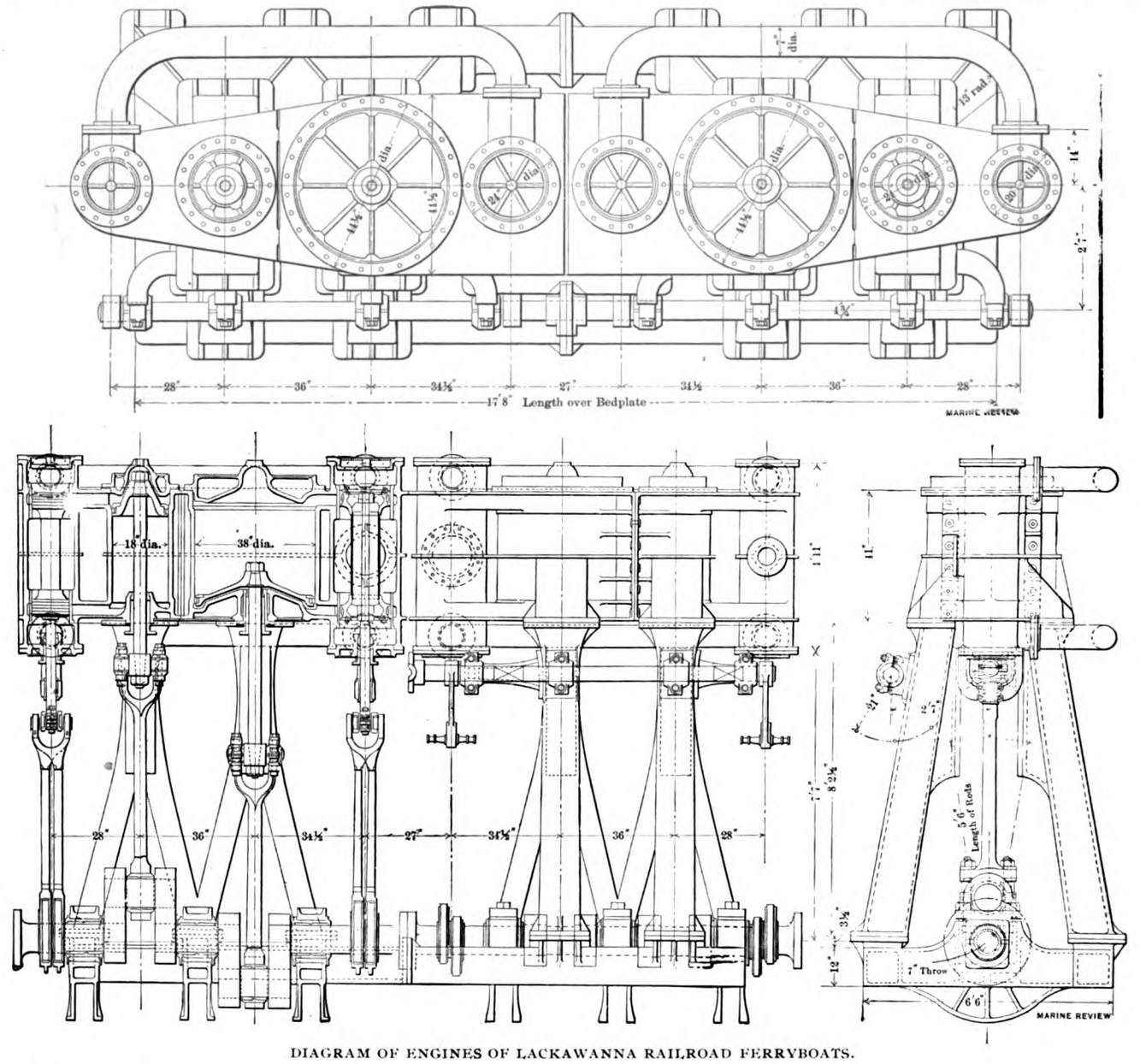


DIAGRAM OF ENGINES OF LACKAWANNA RAILROAD FERRYBOATS.

The ferryboats, as stated, are of the double ended type, operating a single screw. Power is furnished by two compound surface condensing engines, 18 and 38 in. cylinder diameter by stroke of 28 in. The bed plate, housings, cylinders, cylinder and valve chest covers are of cast iron. The crank shafts, thrust line and propeller shafting, connecting rods, piston rods, links, eccentric rods and valve stems are all of forged steel. The shafting was manufactured by the Bethlehem Steel Co. Steam is supplied by two Scotch boilers 13 in. in diameter by 12 ft. 1 in. long, allowed a pressure of 150 lbs. per sq. inch. The pump equipment consists of one independent double cylinder vertical beam air pump of the George F. Blake Manufacturing Co.'s make, 7½ in. steam cylinder, 16½ in. air cylinder by 12 in. stroke. The feed pump is of the Blake horizontal duplex type 8 in. steam cylinder, 5 in. water cylinder by 12 in. stroke. Fire and bilge pumps are also supplied by the Blake company. There will also be installed a centrifugal calculating pump capable of discharging 2,000 gallons per minute in connection with the condenser. The condenser is of the centrifugal type with cast iron shell. The tubes are of brass ¾ in. diameter and the condenser has a cooling surface of 3,000 ft. The electric lighting equipment consists of two General Electric generators directly connected to two straight line engines of 25 and 15 K. W. The ferries will be heated by the indirect hot air system, and the latest improved Sturtevant outfit for this service will be installed. The Williamson combined steam steering apparatus will be used.

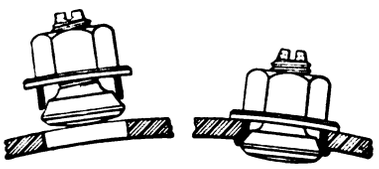
Plans were furnished by Gardner & Cox, 1 Broadway, working in consultation with Col. E. A. Stevens.

The British ship Brodick Castle has been bought by Hind, Rolph & Co., San Francisco, giving that company a fleet of twenty vessels which are among the finest on the Pacific coast.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

MOSHER WATER-TUBE BOILER.

By referring to the cuts it will be seen that the Mosher boiler is the simplest of all known types of water-tube boilers, as it consists of only a steam drum supported by slightly curved tubes which connect it with two water drums with the furnace and grate bars between. The gases pass from the fire immediately through, among and across the tubes on the straight through system.



The tubes are given a slight curve so that all their upper ends aim towards a row of hand holes in the upper portion of the steam drum, as shown by the tubes drawn in dotted lines, from which it will be seen the tubes may be conveniently cleaned or renewed through these hand holes, any one of which may be withdrawn and replaced without disturbing any other tube. A tube has been removed and replaced in fourteen minutes. Five transverse rows, or as many as forty tubes may be cleaned or replaced through each hand hole. By comparison with other boilers, it will be found that the Mosher boiler contains the smallest number of parts, and is the simplest of any boiler thus far produced.

The hand holes are closed by special plugs or covers which consists of a conical-headed bolt, a short piece of copper tube, a washer and nut. The head of the bolt and copper tube may be inserted in the opening (or hand hole) from the outside of the drum, after which the nut may be screwed up, drawing the conical head of the bolt into the same, thereby flaring the end of the copper tube, forming a metallic gasket and producing an absolutely steam-tight metallic joint, the pressure being on the conical head of the bolt, thereby holding it to its seat and tending to increase the tightness of the joint. These copper tubes or gaskets may be used over and over again.

A very important adjunct to a water-tube boiler is a feed water heater, and the very simple form adopted by us may be fully understood by again referring to the cuts and the following description: The feed water heater consists of two large pipes which act as headers; they are placed parallel with the generating tubes of the boiler. These headers are connected by a large number of horizontal tubes expanded into closely spaced holes in the headers, which have a hand hole opposite each tube, thus permitting it to be conveniently cleaned or renewed as occasion requires. By breaking the joints of two unions the entire feed water heater may be withdrawn into the boiler room, should extensive cleaning or repairs be necessary.

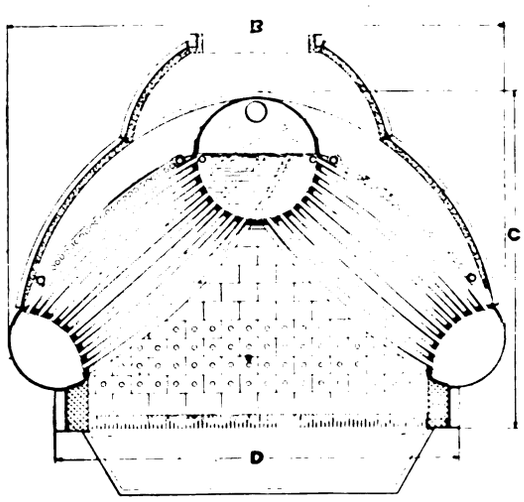
By again referring to the cuts it will be seen the feed water heaters are placed just outside the groups of generating tubes of the boiler and as installed in the Mosher boiler it serves a further important function; the heat from the furnace would ordinarily have a tendency to rise vertically and sweep over only the upper portion of the tubes and enter the stack almost at once, as the space between the generating tubes of the boiler represents an opening many times greater than necessary to accommodate the gases of combustion. This would admit of the gases selecting a path among only a few of the tubes and thus avoid passing over only a small portion of the tube heating surface of the boiler. Whereas the tubes in the feed water heater may be placed as close together as desired and thus reduce the total space between them for the passage of the gases to an opening just sufficient to accommodate them, but in order to find sufficient opening they must make use of all the openings between the heater tubes throughout their whole length, in which case the gases must first have been thoroughly distributed over all the heating surface of the generating tubes, thus filling the total space between them, thereby reducing their velocity and thus causing the gases to pass much more slowly over their surface and thereby remaining a much longer period in contact with the heating surface, giving up a much larger amount of heat than would be the case if they were allowed to pass off at high velocity as they would have done without the specially close spaced tubes in the Mosher feed water heater.

The feed water enters at the lower end of the headers, and travels back and forth through the tubes until it reaches the upper end of the headers, from here it enters the steam drum through the usual check and feed valves on its front head. These headers are divided by partitions separating them into sections connecting four tubes each, thereby causing the feed water to pass through four tubes at a time, in which case it must pass through them much slower than if it all had to pass through a single line of tubes and thereby remain in contact with the heat a much longer period, thus absorbing a much larger quantity of heat and producing a very low stack temperature with greatly improved efficiency.

DISTRIBUTION OF FEED WATER AND CIRCULATION.

Another important feature in these boilers is the system of introducing the feed water. The feed water after having passed through the heater is delivered through the feed pipe connection on the front head of the boiler to the two distributing pipes shown in the steam drum over the outer rows of tubes. These pipes are perforated with a row of holes so placed over each tube as to cause a jet of the feed water to be projected into each outer tube. As these jets are submerged below the water line, they form induced currents, causing large quantities of the water already in the boiler to be carried down through the outer rows of tubes, thus forming a forced circulation and thereby enabling the heat to be absorbed to the best possible advantage.

These boilers are fitted with thoroughly insulated steel casings made up in conveniently removable sections and are provided with special means for admitting air through perforated bricks into the furnace above the fuel, which greatly assists in completing its combustion. It consists of a double



casing at the ends of the furnace, with a space between connecting with the ash pan and provided with dampers for controlling the amount of air which is allowed to pass between the double casing where it passes into the furnace through perforated fire bricks which line the end of same. A further object of this double casing with the air passing between is to provide more thoroughly against radiation into the fire room from the high temperature of the furnace.

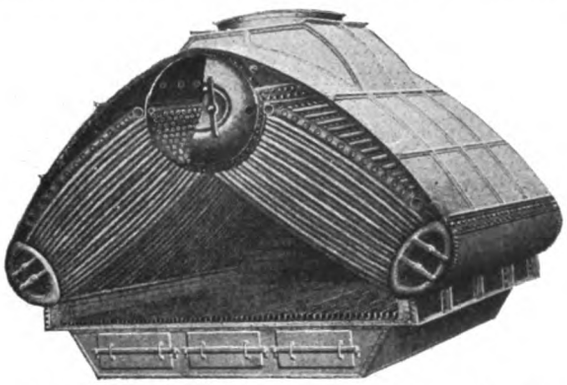
The Mosher boiler by its design is a safety boiler, all parts being circular; and the presence of flat surfaces, staybolts and braces is entirely avoided. The slight curve in the tubes furnishes ample provision for expansion and contraction, as it is well known that the tubes next to the fire lengthen more than those further away, and therefore it is necessary to provide for this unequal expansion and contraction and all resulting

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

strains therefrom in the Mosher boiler are eliminated; yet the tubes are curved so slightly that it in no way interferes with cleaning the tubes with the usual tube scrapers and brushes.

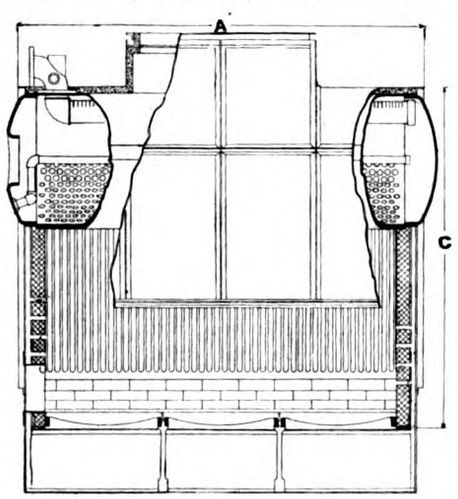
ECONOMY.

From the foregoing it will be seen that the Mosher boiler is constructed so as to reduce the temperature of the escaping gases to the lowest possible point by bringing the feed water in contact with them just before they leave the boiler on their



way to the stack, and thus absorb the heat to the greatest possible extent. Most of the impurities contained in the water will be deposited in the feed water heater and any impurities not deposited there will be carried directly to the mud drum entirely away from the heat, where they will be retained and thus be prevented from entering the generating tubes or any portion of the boiler subjected to high temperature, where they may be blown out as occasion requires. A clean boiler insures its working up to its full rated capacity at its highest efficiency. The feed water being heated before entering the boiler prevents the possibility of there being any cold parts of the boiler and severe strains due to unequal expansion and contraction are avoided.

Owing to the small number of parts, great simplicity and light weight of the Mosher boiler they are able to compete with any manufacturer where a first-class boiler is required. Among the many other important features wherein this boiler is a most economical investment are that its weight and cubical space occupied are only about one-half that of any other boiler on the market. Owing to the very roomy furnaces and perfect



arrangement of dampers and air inlets, the combustion is very complete, which greatly improves the economy and the consequent absence of black smoke and flaming at the stack is an important advantage in these boilers.

Owing to the design and curvature of the tubes (which are arranged in such a manner they will be more evenly heated and can expand freely), and when cooled return to their original forms instead of being permanently distorted, as generally happens in boilers with tubes originally straight, which explains why the Mosher boilers are absolutely free from all danger of leaky tubes, regardless of the intensity of the fire.

As these boilers have a larger steam drum and a much larger area of water level or releasing area, they also carry a much larger quantity of water and have a larger amount of steam room than any other boiler, from which it follows that they carry their steam pressure and water much steadier; besides the feed water supply to these boilers may be stopped a much longer period than is possible with other types of water tube boilers.

These boilers are manufactured by the Mosher Water Tube Boiler Co., No. 1 Broadway, New York, to whom all communications should be addressed.

PINTSCH LIGHTING SYSTEM.

A statement from the Julius Pintsch Co. of Berlin to the Safety Car Heating & Lighting Co. of New York, embraces very comprehensive statistics of the application of the Pintsch system of lighting to railway cars, locomotives, buoys and beacons throughout the world. The figures given below show that 130,000 cars, 5,800 locomotives and 1,700 buoys and beacons are equipped with this system, and that 372 gas works are in operation to manufacture gas for the system which has been adopted by the majority of the railways and lighthouse departments of the world:

	Cars.	Locomotives.	Gas Works.	Buoys and Beacons.
Germany	45,200	5,583	75	155
Denmark	45		3	21
England	21,000		87	370
France	7,500		30	370
Holland	3,700	5	10	100
Italy	1,570		5	20
Switzerland	410	2	1	
Austria	5,525		10	5
Russia	4,000	132	13	20
Sweden	750	53	4	2
Servia	220		1	
Turkey	120			
Bulgaria	98		1	
Egypt	150		3	70
Canada	450		2	255
Brazil	825	31	2	45
Argentine	1,150		10	5
Chili	50		2	
Australia	3,000		13	40
India	10,500		16	
United States	23,500		80	250
Japan	150		2	20
China			1	25
Mexico	125		1	
Total	130,158	5,806	372	1,703

Fire that caused the destruction of 5,000,000 ft. of lumber belonging to Handy Bros., Bay City, Mich., occurred on the afternoon of July 24. The Davidson ship yard was in danger but was saved through the strenuous efforts of the company. The New Witch, Capt. Dawson's fire tug, was first to get water on the fire. Handy Bros. estimate their loss at between $60,000 and $70,000. The Michigan Central lost over a mile of sidings, and estimated the loss on cars, rails, etc., at $7,000 The Detroit & Mackinac railway lost $3,000 on cars, the damage to the steamer Nicaragua is about $700. Handy Bros. mill will continue operations as 3,000,000 ft. of lumber has arrived from Duluth. The fire is attributed to the careless throwing of a lighted cigar.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

AUG 8 1904

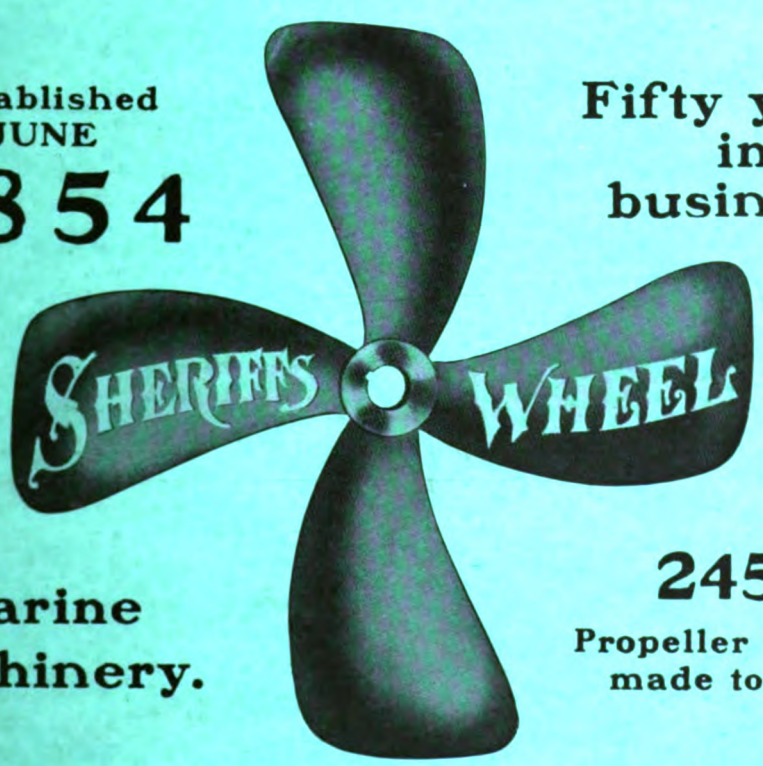
YORK
RARY

VOL. XXX. CLEVELAND, O., AUGUST 4, 1904. No. 5

Sheriffs Manufacturing Co.

Established JUNE 1854

Fifty years in business.



Marine Machinery.

2450 Propeller Wheels made to date.

Milwaukee, Wisconsin, U.S.A.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from NEW YORK PUBLIC LIBRARY

Salt Water Corrodes all Metals EXCEPT the

Victor Non-Corrosive Silver

which is also Non-Tarnishing.

Tensile Strength 53,280 Lbs. Elongation 15.7%.

Used for Bilge Pumps, Valves, Fittings, Sea Connections, Condensers, Propellers, Deck Fittings, Hardware, Plumbing Fixtures, Railings, etc.

Takes a Silver Finish, Needs No Polishing.

Write for sample and prices.

VICTOR METALS CO.,

EAST BRAINTREE, MASS. NEW YORK OFFICE, 29 BROADWAY.

Detroit White Lead Works

DETROIT VARNISH COMPANY,

Manufacturers of

Paints, Varnishes and Specialties specially prepared for marine use.

DETROIT. - CHICAGO. - BUFFALO.

CLEVELAND BRANCH:

W. H. DONALDSON & CO.,

127 West River Street.

Fogg's Resilent Felt Mattresses and Cushions.

Manufactured by

M. W. FOGG,

202 Front St., N. Y.

Send for Illustrated Catalogue.

Improved Bolt Helmet

Established 1844.

A. SCHRADER'S SON.

32 Rose Street, NEW YORK.

Manufacturer of

Submarine Armor and Diving Apparatus.

We carry a complete stock of Dresses, Hose and Repair Sundries.

All orders filled day received. Write for our prices.

THE BROWN HOISTING MACHINERY CO. INCORPORATED

Sole makers of the "Brownhoist" High Speed Cantilever and Gantry Cranes. The most economical cranes for covering large areas in steel works or ship yards.

Machinery For Handling Structural Work, Marine Plates, etc., in Ship Building Yards.

Coal and Ore Handling Machinery.

Cranes of all Types. Steam, Electric and Hand Power.

Main Office and Works, CLEVELAND, O., U. S. A.

Eastern Office, 26 Cortlandt St., New York City. Pittsburg Office, Carnegie Building, Pittsburg, Pa. European Office, 39 Victoria St., London, S.W.

Established 1857.

AMERICAN SHIP WINDLASS CO.

PROVIDENCE, R. I.

We have completed our new IRON FOUNDRY, and are prepared to execute orders for Castings, guaranteeing first-class work, prompt service and reasonable prices.

SHIP MACHINERY EMBODYING THE LATEST DESIGNS AND MANY IMPORTANT PATENTED IMPROVEMENTS.

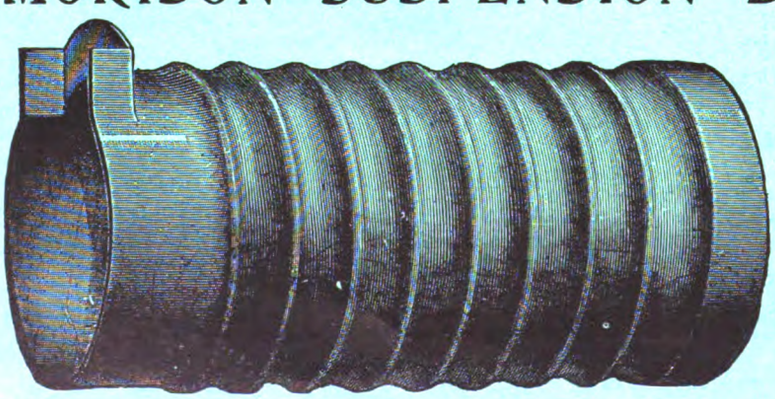
SOLE BUILDERS OF THE

Original and Only Automatic Steam Towing Machine.

SEND FOR ILLUSTRATED CATALOGUE.

P. O. BOX 53. Address: FRANK S. MANTON, President.

MORISON SUSPENSION BOILER FURNACES



FOR LAND AND MARINE BOILERS.

UNIFORM THICKNESS—EASILY CLEANED
UNEXCELLED FOR STRENGTH.

Also Fox Corrugated Furnaces.

MANUFACTURED BY

THE CONTINENTAL IRON WORKS,

West and Calyer Sts., NEW YORK.

Near 10th and 23d Sts. Ferries. Borough of Brooklyn.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

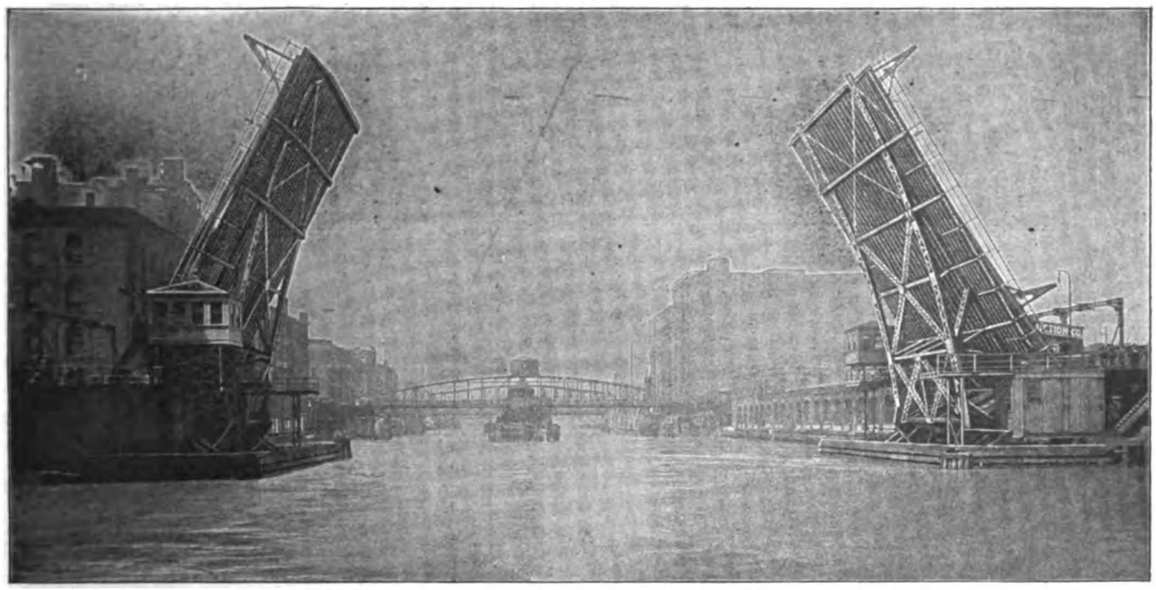
Original from NEW YORK PUBLIC LIBRARY

CONTRAST

The wide and clear channel provided for navigation by this Scherzer Rolling Lift Bridge with the two narrow and inadequate channels allowed by the obstructing center-pier swing bridge further up the river.

Scherzer Rolling Lift Bridges

can be opened or closed in less than 30 seconds, and in opening roll back and away from the navigable channel, giving greater freedom for the movement of vessels through the draw than any other type of movable bridge. They can be designed to span any desired width of channel and to meet the most complex local conditions.



The Scherzer Rolling Lift Bridge Co.,

Main Offices:

1616 Monadnock Block, - - Chicago, U. S. A.

ALLEN PORTABLE PNEUMATIC RIVETING MACHINES.

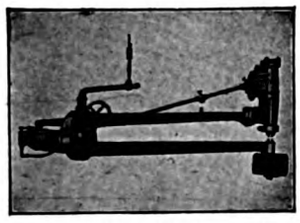
"Cable Address, Riveters" W. U. Code

The following concerns are using our machines

Unites States Navy Yard, Bremerton, Wash.

United States Navy Yard, Portsmouth, N. H.

United States Navy Yard, Mare Island, San Francisco, Cal.



Brown Hoisting Machinery Co., Cleveland, O.

New York Ship Building Co. Camden, N. J.

Wm. R. Trigg Co., Richmond, Va.

Canadian Ship Building Co. Bridgeburg, Ont.

ESTABLISHED 1872.

JOHN F. ALLEN, - 370-372 Gerard Avenue, NEW YORK.

Steel Castings

from 100 to 75,000 lbs.

Otis Steel

Ship Plates
Flange Plates
Tank Plates
Steel Car Axles
Forgings of all kinds

"Otis" Fire Box Plates a Specialty.

OTIS STEEL CO., Ltd.,
Head Office and Works, CLEVELAND, O.

AGENCIES.

New York: Thorpe, Platt & Co., 97 Cedar St.
Montreal: Homer Taylor, 183 St. James St.
St. Louis: C. A. Thompson, 516 N. Third St.
San Francisco: John Woodlock, 154-156 First St.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

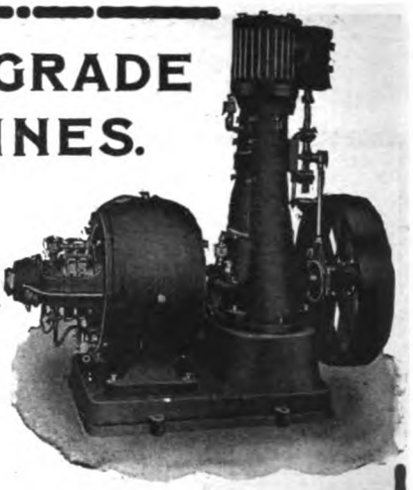
THE
U.S. INJECTORS
ARE BEST.

Adopted by the United States Government and 200,000 engineers. Buy of the dealer. Do not accept a substitute. Our "Engineer's Red Book" should be in every engineer's pocket. Answers 500 questions of vital importance. Write for it to-day, it's free . . . . . .

American Injector Co.,
Detroit, Mich., U. S. A.

HIGH GRADE ENGINES.

VERTICAL AND HORIZONTAL AUTOMATIC ENCLOSED TYPE.

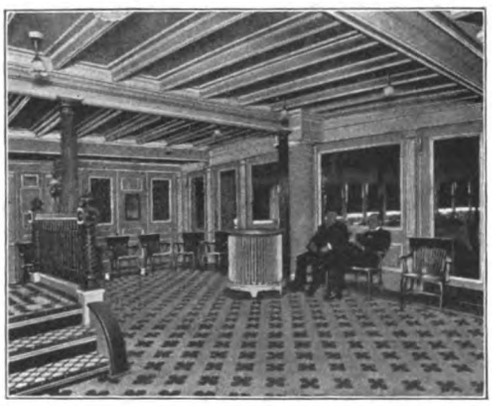


FOR DIRECT-CONNECTED AND BELTED SERVICE PERFECT REGULATION AND HIGHEST ECONOMY IN STEAM GUARANTEED. ALSO HEATING, VENTILATING AND DRYING APPARATUS, MECHANICAL DRAFT, STEAM AND ELECTRIC FANS, EXHAUSTERS AND BLOWERS.

Manufactured by
WM. BAYLEY & SONS CO.
MILWAUKEE, WIS., U.S.A.

SALES AGENTS:
OHIO BLOWER CO., CLEVELAND, O.
THE GLOBE ENGINEERING CO., SAN FRANCISCO, CAL.
ZIMMERMANN-WELLS-BROWN CO., PORTLAND, OREGON.

INTERLOCKING RUBBER TILING.



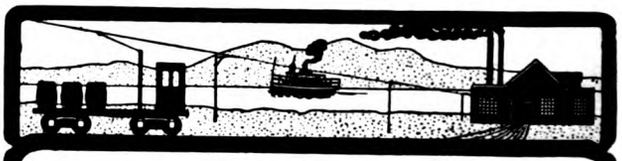
As laid by us on the Quarter Deck, Dining-room, Stairway, etc., of the Steamer "City of Troy."

Is noiseless, non-slippery waterproof and thoroughly sanitary, more durable than stone or earthen tiles, elegant in appearance, manufactured in a carefully selected variety of colors. Endorsed by the best architects and engineers. A perfect floor for business offices, banking-rooms, court-rooms, vestibules, halls, billiard-rooms, smoking-rooms, cafes, libraries, churches, hospitals hotels, etc. It is especially and peculiarly adapted for Steamships, Yachts, etc. It stands the constant straining and racking without cracking or separating, and its non-slippery feature is of high value. Samples, estimates and special designs furnished upon application.

BEWARE OF INFRINGERS. PATENTED.

MANUFACTURED SOLELY BY

NEW YORK BELTING & PACKING CO., Ltd.
91-93 CHAMBERS ST. NEW YORK
PHILADELPHIA, 724 Chestnut St. BOSTON, 232 Summer St.
BALTIMORE, 41 South Liberty St. INDIANAPOLIS, 229 So. Meridian St.
CHICAGO, 150 Lake St. ST. LOUIS, 411 No. Third Street.
SAN FRANCISCO, 509-511 Market St.
ARTHUR L. GIBSON & Co., 19-21 Tower Street, Upper St. Martin's Lane, LONDON, ENGLAND.



Technical Office of Le Mois Scientifique et Industrial.

8 Rue Nouvelle, Paris (9e).

We have with our collaborators opened an office to supply answers on all scientific, mining, technical and bibliographical studies or practical questions. We help *industrials* who have opened new enterprises, *professors* who must resolve unfamiliar problems, *lecturers*, *teachers*, *students*, *etc.* We furnish a complete course, detailed bibliographical work, complete study, cost prices, plans, drawings, illustrations, projections, etc.

ASK FOR SPECIAL NOTICE.

Add 4 cents for postage.
Short Delays for Answers. The Terms are very moderate.

7,000,000 CARD'S INDEX.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

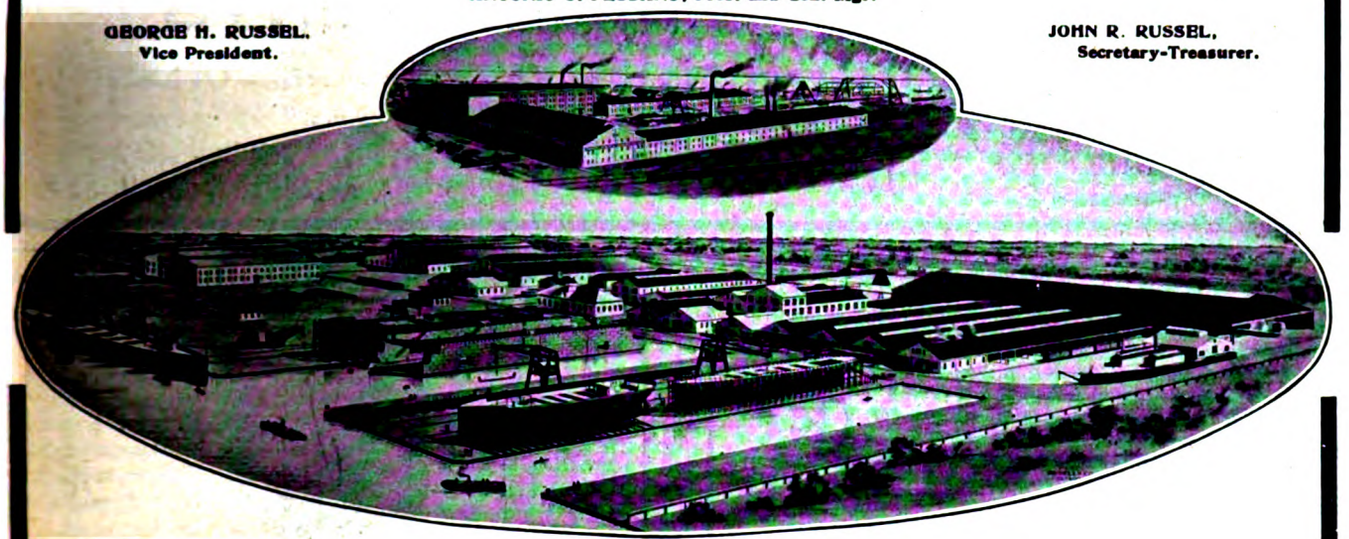
GREAT LAKES ENGINEERING WORKS

DETROIT, MICH.

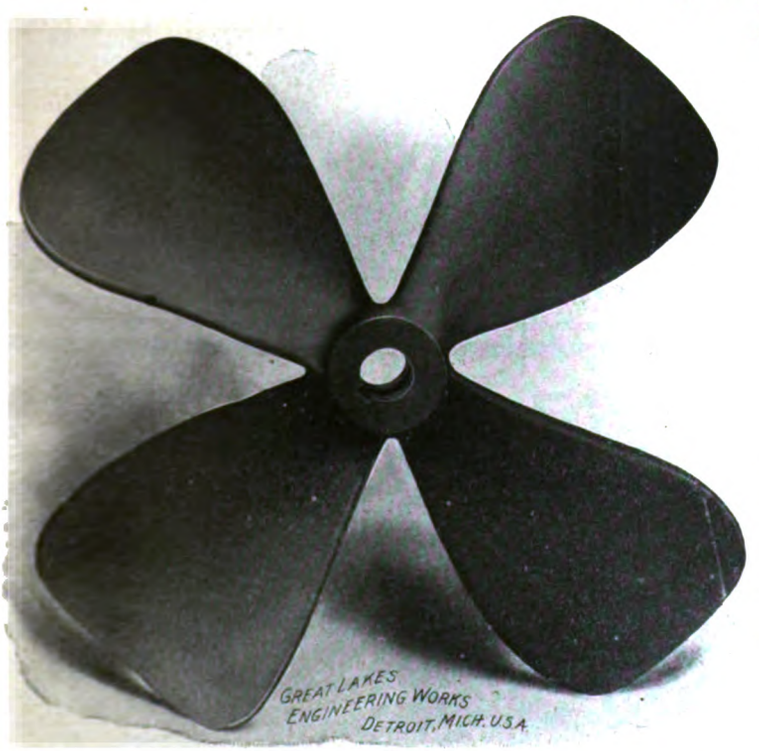
ANTONIO C. PESSANO, Pres. and Gen. Mgr.

GEORGE H. RUSSEL, Vice President.

JOHN R. RUSSEL, Secretary-Treasurer.



Steel Ship Builders
Floating Dock
Marine Engines
Marine Repairs
Hydraulic Dredges
Hydro Carbon System
Propeller Wheels



Semi-Steel Propeller Wheels

made either Solid or improved Sectional Type. Our Wheels possess many points of merit not found in other makes.

Quick deliveries guaranteed.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

SIPE'S JAPAN OIL

Superior to linseed oil for all kinds of painting.

Cheaper and more durable. Does not require the addition of Dryers.
Not affected by sulphur or salt water

OUR BLACK PAINTS

Universally used. Best on the market.

For PAINTING STACKS, CYLINDERS, HULLS, E C.

Prices and Samples furnished on application.

JAS. B. SIPE & CO. Sole Manufacturers, ALLEGHENY, PA., U. S. A.

A boat painted white with

OXIDE OF ZINC

will remain white in all seas and all climates; and tints based on OXIDE OF ZINC will remain pure and unaltered. There is no other satisfactory white pigment for marine service.

FREE: Our Practical Pamphlets:
"The Paint Question"
"Paints in Architecture"
"Specifications for Architects"
"French Government Decrees"

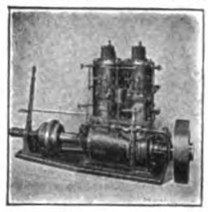
The New Jersey Zinc Co.,
71 Broadway,
NEW YORK.

We do not grind zinc in oil List of zinc paint manufacturers furnished on request.

THE MIETZ & WEISS MARINE OIL ENGINE.

SIZES FROM 1 TO 60 H. P.

Adopted by the United States and Foreign Governments.



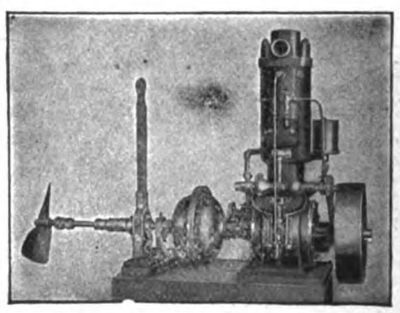
Runs with common kerosene, distillate or fuel oils. No dangerous gasolene used.

MOST ECONOMICAL AND SAFEST POWER KNOWN.

Stationary and Marine Engines

For Pumping, Electric Lighting, Charging Storage Batteries and All Power Purposes.

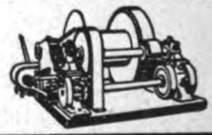
Hoists, Pumps, Air Compressors, Portable Engines, Dynamos.



Highest Award for direct coupled engine and dynamo, Paris Exposition, 1900.
Gold Medal, Pan-American Exposition, 1901.
Gold Medal, Charleston, S. C., Exposition, 1902.

Send for Catalogue Dept. 102.

AUG. MIETZ,
128-138 Mott St.,
NEW YORK.



GASOLENE MARINE ENGINES
Suitable for all Boats from 3½ to 200 H.P.
Over 100 in successful use.
Also the well known and always reliable Wootters Gas or Gasolene Stationary Engines.

HOISTING ENGINES
Of all kinds and sizes, and for all purposes, especially for ship use.
Docking and Hauling Engines and Wire Rope Windlasses.

AUTOMATIC TOWING MACHINES
Somewhat the cheapest, and altogether the best. Positively guaranteed.
Automatic Fog Whistle Machines
Steam Steering Engines.

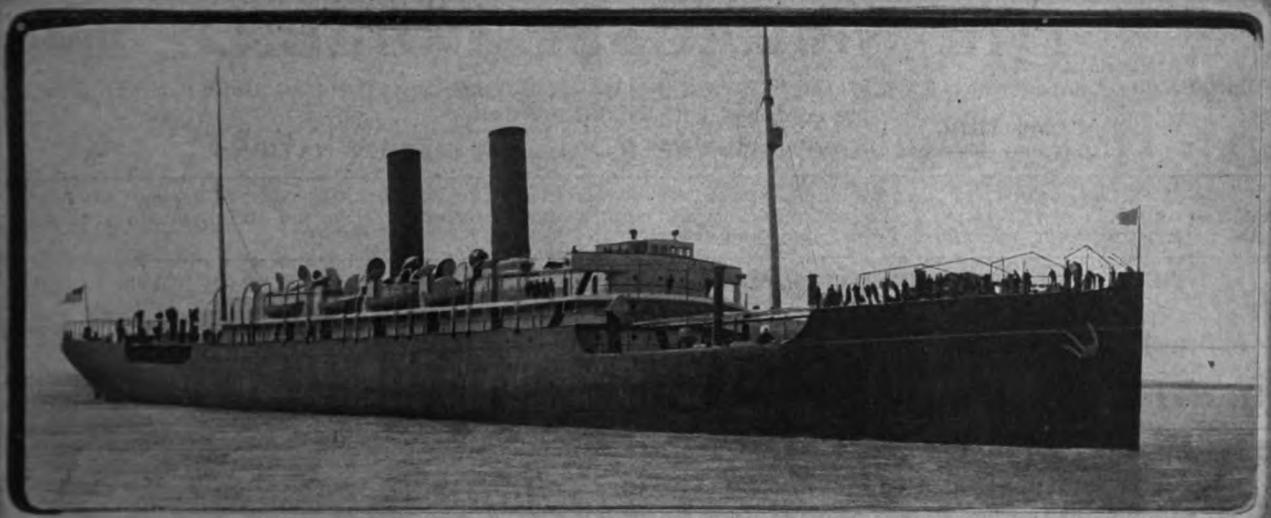
FOR THESE AND OTHER WELL KNOWN SPECIALTIES ADDRESS ALL INQUIRIES TO.

THE CHASE MACHINE CO. Engineers and Machinists, CLEVELAND, OHIO.

Generated on 2024-07-26 21:29 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

OUR SHIPYARD

WITH ITS ACCOMPANYING DRY DOCKS AND WORKS, WAS CAREFULLY DESIGNED, EQUIPPED AND COMPLETED FOR THE



CONSTRUCTION AND REPAIRING IN EVERY DETAIL OF

BATTLE SHIPS · ARMORED CRUISERS · PROTECTED CRUISERS · GUN BOATS · TORPEDO BOATS · TORPEDO BOAT DESTROYERS · SUBMARINE BOATS · OCEAN LINERS · PASSENGER STEAMERS · FREIGHT CARRIERS · ETC · ETC ·

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO.
1 BROADWAY NEW YORK — NEWPORT NEWS, VA.

Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

BABCOCK & WILCOX

Forged Steel Water Tube Marine Boilers

In use on the Augustus B. Wolvin, largest steamer on the Great Lakes.

New Battleship Rhode Island, 19,000 Indicated Horse Power, and new Cruiser California, 23,000 Indicated Horse Power will have these boilers. Boilers ordered for the largest Battleship of the Italian navy, Napoli, 19,000 Indicated Horse Power.

Straight Tubes | PRINCIPLES OF CONSTRUCTION HAVE STOOD THE TEST OF TIME | **Expanded Joints**

Offices in the Largest Cities of the World.

Works: Bayonne, N. J. **Paris, France.** **Renfrew, Scotland.** **Oberhausen, Germany.**

THE NICLAUSSE BOILER.

The largest merchantmen in the world, the S. S. Minnesota and Dakota, of 33,000 tons and 11,000 H. P. each, are equipped with **Niclausse Boilers.**

641,000 HORSE POWER IN THE NAVIES OF ELEVEN NATIONS.

THE NEW JAPANESE CRUISERS, KATORI AND KASHIMA, OF 16,000 H. P. EACH, AND IN THE UNITED STATES NAVY THE ARMORED CRUISERS PENNSYLVANIA AND COLORADO, 23,000 H. P. EACH, AND THE BATTLESHIPS GEORGIA AND VIRGINIA, 19,000 H. P. EACH, WILL BE FITTED WITH THESE BOILERS

THE ONLY WATER-TUBE BOILER SUCCESSFULLY USED AND PROVED IN LARGE SHIPS

Requires no space at sides or rear—cleaned from the front.
Employs no tube-caps—tubes can readily be withdrawn without mutilation.
FORGED STEEL THROUGHOUT.

THE STIRLING COMPANY - - - - Chicago.

PINTSCH GAS LIGHTED BUOYS

Adopted by the English, German, French, Russian and United States Light House Departments for Channel and Harbor Lighting; over 1700 gas buoys and gas beacons in service. : : : :

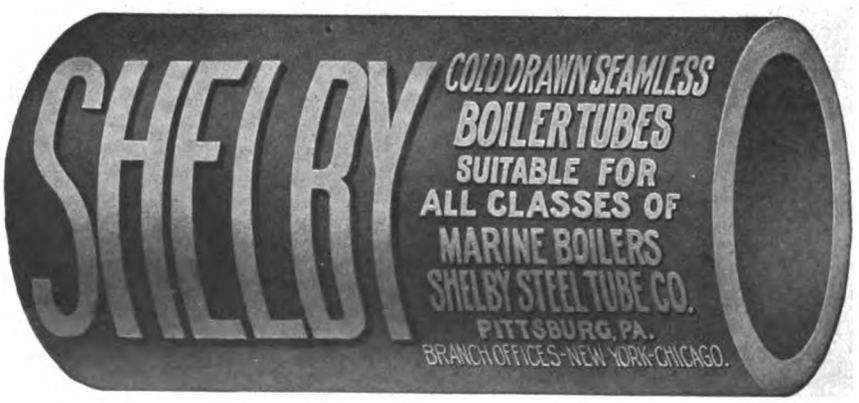
BURN CONTINUOUSLY FROM 80 TO 365 DAYS AND NIGHTS WITHOUT ATTENTION, AND CAN BE SEEN AT A DISTANCE OF SIX MILES. : : : :

Brilliant and Steady Illumination. **Economical and Reliable in Operation**

Controlled by the

SAFETY CAR HEATING AND LIGHTING COMPANY,

160 BROADWAY, NEW YORK CITY.



Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Your Boilers Need Attention!

SCALE WILL FORM WHEN WATER IS EVAPORATED

DEARBORN FEED-WATER TREATMENT

SPECIAL MARINE FORMULA

PREVENTS SCALE — PRESERVES THE BOILERS

Agents at Lake Ports

DEARBORN DRUG & CHEMICAL WORKS

G. R. CARR, Mgr. MARINE DEP'T.

15 Branch Offices in U. S.

27-34 Rialto Bldg., CHICAGO.

THE STANLEY B. SMITH COAL AND DOCK CO.,

TOLEDO HARBOR, TOLEDO, OHIO.

1,800 Feet of Dock. 6 McMyler Derricks. Capacity 3,000 Tons Daily.

Fuel Lighters.—"KANAWHA." "PENNSYLVANIA." "HOCKING."

Docks.—PENNSYLVANIA R. R. —HOCKING VALLEY R. R. —TOLEDO AND OHIO CENTRAL R. R.

SMITH'S COAL DOCK, Detroit River, DETROIT, MICH.

12 Pockets. Platform. Low Dock.

Operated by STANLEY B. SMITH & CO.

MARINE SUPPLY COMPANY——STORE AND ICE HOUSE ON DOCK.

PITTSBURG COAL COMPANY.

Steamboat Fueling Facilities at Various Points on the Great Lakes:

CLEVELAND HARBOR { 4 Car Dumpers. 3 Lighters.

FAIRPORT HARBOR { 1 Car Dumper. 1 Lighter.

ASHTABULA HARBOR { 1 Car Dumper. 1 Lighter.

ERIE HARBOR { 1 Car Dumper. Fuel Pockets.

DETROIT RIVER BRANCH { Docks and Pockets at Sandwich and Amherstburg.

SAULT RIVER BRANCHES { Dock and Pockets at Detour. Dock and Pockets at Sault Ste. Marie. (The Port Royal Dock Co.)

WE FURNISH ONLY THE BEST GRADE OF **Pittsburg and Youghiogheny Coal.**

GENERAL OFFICE, LAKE DEPARTMENT, PERRY-PAYNE BUILDING, CLEVELAND, OHIO.

TEN SMITH CONCRETE MIXERS IN ONE ORDER.

MADE IN SEVEN SIZES. ANY COMBINATION AS TO MOUNTING AND POWER.

ENDORSED BY BEST ENGINEERS AND CONTRACTORS. SAVES ITS COST IN THIRTY DAYS.

COLONIAL SUPPLY CO., Boston, Mass.

JOHN L. KIRK, Pittsburg, Pa.

THE WM. PATTISON SUPPLY CO. Cleveland, Ohio.

HENSHAW BULKLEY CO., San Francisco and Seattle.

Nearly 600 in use, all giving perfect satisfaction. Send for Catalogs and Booklet "CONCRETE CATECHISM."

809 W. Fifth St., KANSAS CITY, MO. **CONTRACTORS' SUPPLY & EQUIPMENT CO.,** 232 Fifth Ave., CHICAGO.

Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from NEW YORK PUBLIC LIBRARY

WM. L. BROWN, President. J. C. WALLACE, Vice-Pres. O. R. SINCLAIR, Sec'y and Treas. ALFRED G. SMITH, Gen'l Supt.

CHICAGO SHIP BUILDING COMPANY,

Steel Ship Builders and
Dry Dock Proprietors.

Dry Dock and Yards: 101st St. and Calumet River, - - - CHICAGO, ILL.

MILWAUKEE DRY DOCK COMPANY,

MILWAUKEE, WISCONSIN.

Ship Repairs of all kinds.

Two Ship Yards offer every Facility for the Repair of both Steel and Wooden Vessels.

South Yard Dock is 450 ft. long on keel blocks; 460 feet over all; 60 feet width of gate, and 16 feet over sill.
West Yard Dock 312 feet on keel blocks; 45 feet width of gate, and 12 feet over sill.

RUDDER PIT IN EACH DOCK. *ELECTRIC LIGHTS FOR NIGHT WORK.*

Main Office at SOUTH YARD, Foot of Washington Street.

EDWARD SMITH, President. WILLIAM KNIGHT, Ass't Sec'y and Treas. O. T. WARREN, Superintendent

THE BUFFALO DRY DOCK COMPANY,

GANSON STREET AND BUFFALO RIVER.

Operating Four Docks, Sixty-Ton Shear Legs, and in every way Equipped with Modern Plant for the Building and Economical Repairs of

STEEL AND WOODEN SHIPS.

LONG DISTANCE TELEPHONE CONNECTIONS:

Office Telephone, 515 Seneca. President's Telephone, 3920 Seneca, Office.
President's Telephone, 209 Bryant, Residence. Asst. Sec'y & Treas., Telephone, 609 Bryant, Residence.

THE SUPERIOR SHIP BUILDING COMPANY,

Ship and Engine Builders.
Dry Dock and Repairs of all kinds.
Two Largest Dry Docks on the Lakes.

Large Stock of Material Always on Hand for Repairing Wooden and Metal Ships.
Repairing Promptly Attended to, Night or Day.

West Superior, Wis.

Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

W. L. BROWN, President.
JAS. C. WALLACE, Vice-President and General Manager.
R. C. WETMORE, Secretary and Treasurer.

DRY DOCKS IN CLEVELAND:
No. 1, foot Weddell St., 547 ft. x 65 ft. x 15 ft. 6 in.
No. 2, foot Weddell St., 450 ft. x 50 ft. x 16 ft.
No. 3, Elm St , 340 ft. x 50 ft. x 13 ft.
Dry Dock at Lorain, 560 ft. x 60 ft. x 17 ft.

THE AMERICAN SHIP BUILDING COMPANY,

Office, 120 Viaduct, Cleveland, O.

Marine and Stationary Engines

STEEL SHIPS

Boilers and Auxiliary Machinery

Sole Agents for the Lakes for the Ellis & Eaves Induced Draft System, as applied to boilers, giving increased power and great economy.

Prompt Attention Given to Ship Repairs of All Kinds

WORKS AT CLEVELAND AND LORAIN

ALEXANDER McVITTIE President and Manager. WILLIAM C. McMILLAN, Vice President. M. E. FARR, Secretary and Treasurer.
CHARLES B. CALDER, General Superintendent. FRANK E. KIRBY, Consulting Engineer.

DETROIT SHIPBUILDING COMPANY,

Ship and Engine Builders, Detroit, Mich.

Sole Owners for the Lakes and Atlantic Coast of the HOWDEN HOT DRAFT SYSTEM as applied to Boilers, giving increased power and great economy.

Steel Ship Yard Located at Wyandotte, Michigan.
Wooden Ship Yards and Dry Docks, Foot of Orleans Street, and Foot of Clark Avenue, Detroit, Mich.

The Jenks Ship Building Co.

STEEL SHIP BUILDERS,

MARINE ENGINES AND BOILERS.

Prompt Attention Given to Repairs of all Kinds on Ships, Engines and Boilers.

OFFICE AND MACHINE SHOPS AT FOURTH STREET.
YARDS AT FOOT OF LINCOLN AVENUE.

PORT HURON. - - MICHIGAN.

TO ENGAGE SERVICES

Lighter T. F. NEWMAN, Wrecking Steamer FAVORITE, Wrecking Steamer SAGINAW, or any Tug or Wrecking Service between Lake Huron or Lake Erie, call

PARKER BROS. CO., Ltd., DETROIT, or any office THE GREAT LAKES TOWING CO.

Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

JEFFERY'S PATENT COMBINED

MELTING POT AND PAYING LADLE,

FOR PAYING THE SEAMS OF DECKS WITH MARINE GLUE.

JEFFERY'S PATENT MARINE GLUE.

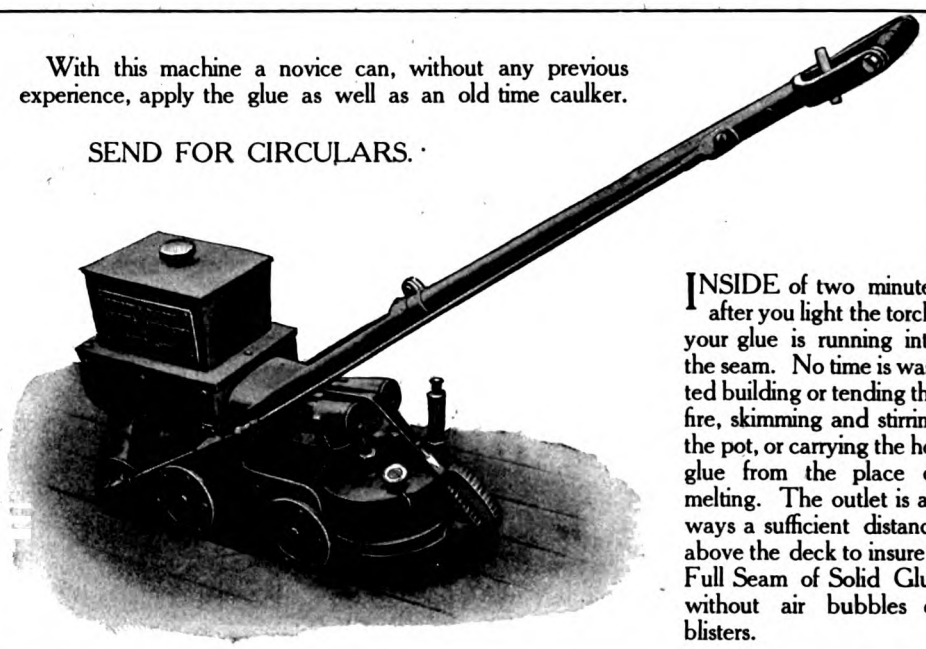
DO not be deceived by cheap imitations. The slight difference in cost between the BEST and the cheapest is nothing compared with the cost of doing the work over again, therefore use

JEFFERY'S PATENT MARINE YACHT GLUE.

Send for samples and circulars.

With this machine a novice can, without any previous experience, apply the glue as well as an old time caulker.

SEND FOR CIRCULARS.

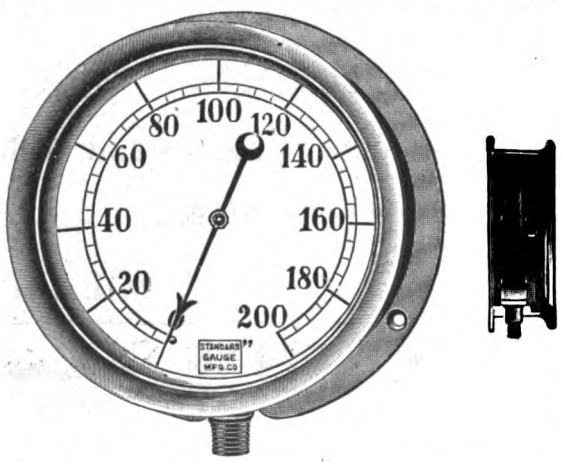


INSIDE of two minutes after you light the torch, your glue is running into the seam. No time is wasted building or tending the fire, skimming and stirring the pot, or carrying the hot glue from the place of melting. The outlet is always a sufficient distance above the deck to insure a Full Seam of Solid Glue without air bubbles or blisters.

L. W. Ferdinand & Company, 152 Federal Street, Boston, Mass.

"STANDARD" SELF-CONTAINED GAUGE.

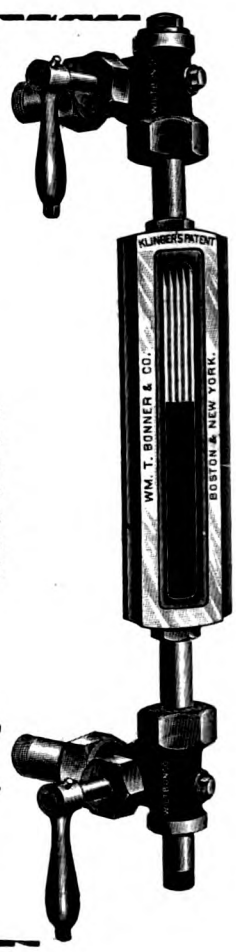
(Single and Double Bourdon Tube; also Auxiliary Spring)



We claim particular merit for our gauges and mention several of the numerous points of superiority:
Mechanism is independent of case.
Material used has wearing qualities that will outwear two gauges of stock generally used
They are non-corrosive attractive and accurate
Send for our catalogue No. 17, which illustrates and describes Gauges of our manufacture for all known purposes; Engine Counters, Clocks, etc.

STANDARD GAUGE MFG. CO.,
SYRACUSE, N. Y., U. S. A.
N. Y. Office: 141 Broadway. Chicago Office: 58 W. Washington St.
Pacific Coast Agents: GEO. H. TAY COMPANY,
San Francisco and Los Angeles, Cal. Seattle, Wash.

KLINGER REFLEX WATER GAUGES and "WILTBONCO" Gauge Mountings.



As supplied for all of the principal Navies of the World, Merchant Marine, and for Locomotives, Automobiles, Stationary and Portable Boilers.

NOTE—With the ordinary Gauge Glass Tube one cannot tell whether it is full or empty. When filled with WATER the REFLEX GAUGE always appears BLACK. When empty, it instantly shows WHITE. No mistake possible. This feature alone is of greatest importance.

SEND FOR CATALOGUE.

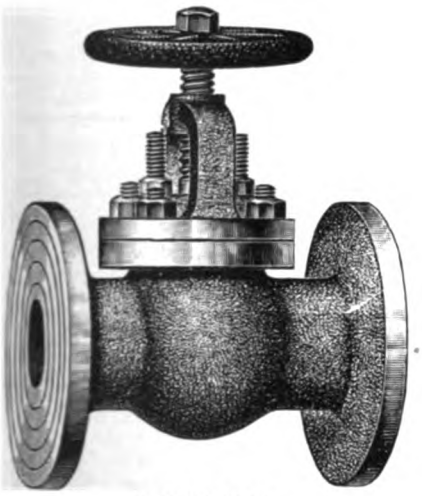
WM. T. BONNER & CO.,
ENGINEERS,
CONTRACTORS AND MANUFACTURERS,
STEAM BOILER ACCESSORIES.
53 STATE STREET, BOSTON.
Factory: Charlestown, Mass.
NEW YORK OFFICE, 141 BROADWAY.

Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

McNAB & HARLIN MFG. CO.

MANUFACTURERS OF

HIGH PRESSURE VALVES,



FACTORY:
PATERSON, N J.

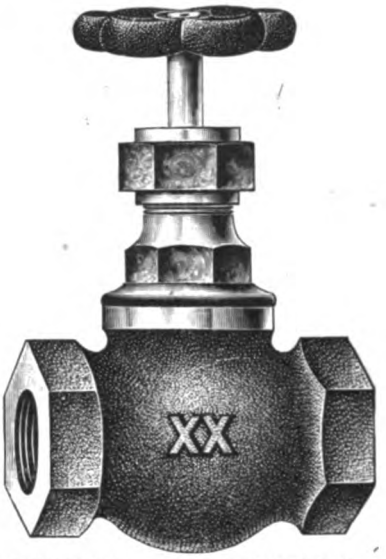
ENGINE AND BOILER TRIMMINGS

AND

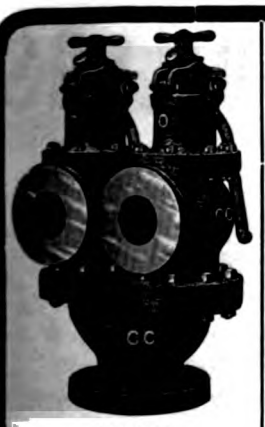
All Brass and Iron Goods

FOR

STEAM,
GAS and
WATER



OFFICE AND SALESROOM:
50-52-54-56 John St.,
NEW YORK.



NO. 1111.

CRANE PATENT COMPOSITE

MARINE POP SAFETY VALVES

Comply fully with all the Requirements of the United States Board of Supervising Inspectors of Steam Vessels and will be Passed by all Local Inspectors.

Brass or Nickel Seat—Locked up Self-Adjusting Pop Regulator.

Powerful Cam Lever—Encased Springs Handle Cap for Turning Valve on its Seat.

Valve can be taken apart without removal from boiler or disturbing outlet pipe.

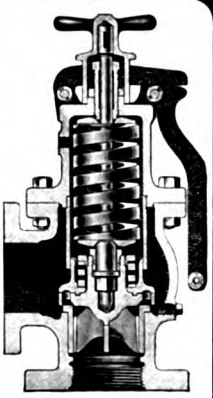
New York
Philadelphia
Cincinnati
Kansas City
Sioux City
St. Paul
Spokane
Omaha

WRITE FOR SPECIAL CATALOGUE

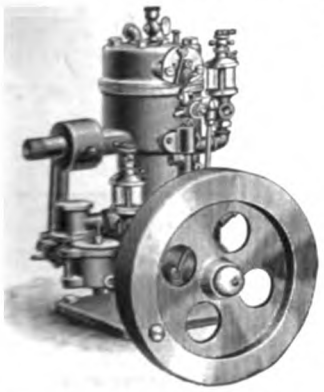
CRANE CO.

CHICAGO
ESTABLISHED 1855

Seattle
St. Louis
Minneapolis
Los Angeles
San Francisco
Salt Lake City
Portland, Ore.



NO. 1109.



THE KNOX ENGINE

STRONGEST
SIMPLEST
MOST RELIABLE

One and Two Cylinders

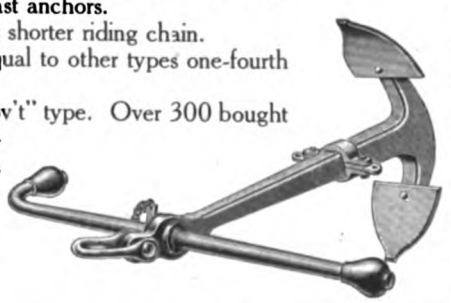
1½ to 13 H. P.

Send for Catalog.

Camden Anchor-Rockland Machine Co.,
Rockland, Maine.

CAMDEN ANCHORS

Forged from the very best wrought iron scrap, far superior to cast anchors.
Construction allows shorter riding chain.
Holding power equal to other types one-fourth heavier.
Cut shows our "Gov't" type. Over 300 bought by U. S. Government in 1903.



Generated on 2024-07-26 21:30 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from
NEW YORK PUBLIC LIBRARY

GENERAL ELECTRIC COMPANY'S

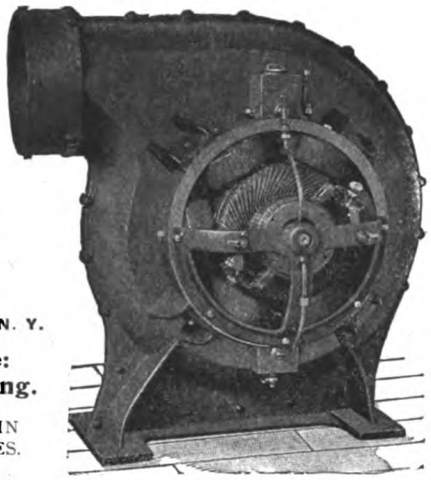
Electric Blowers & Exhaust Fans,

May be run with less attention than any other motive power.

GENERAL OFFICES: SCHENECTADY, N. Y.

Cleveland Office: Citizens Building.

SALES OFFICES IN ALL LARGE CITIES.



SAID AN ENGINEER:

"Yes, they did not know about valves at the time the plant was put in, but they do now. I am replacing all valves with the genuine *Jenkins Bros.*"

BENJAMIN FRANKLIN SAID:

"Experience keeps a dear school. Remember this: they that will not be counseled cannot be helped."

Start your plant with *Jenkins Bros. Valves* and avoid trouble.

JENKINS BROS., New York, Boston, Philadelphia, Chicago, London.

ASHTON

Cam Lever Pop Safety Valves and Non-Corrosive steam gauges

give highest efficiency and durability. Specify them and get the best.

The Ashton Valve Co., Boston, New York and Chicago, U. S. A.

All of the latest and largest **LAKE STEAMSHIPS** are completely equipped with **BLAKE**

DUPLEX AND SIMPLEX SPECIAL MARINE PUMPS.
New Marine Catalog ready about July 1st.

Geo. F. Blake Mfg. Co.

114 Liberty St., :: :: :: NEW YORK CITY.

THE BOURNE-FULLER CO.

IRON, STEEL,

PIG IRON,

COKE.

Cleveland, Ohio.

TUBES

Just Added—a stock of 2, 2½, 3, 3½, 4 and 5 inch

LAP WELDED STEEL BOILER TUBES

in 10, 12, 14, 16, 18 and 20 ft. lengths, for immediate shipment. **Write for Prices.**

BELLEVILLE WATER-TUBE BOILERS

NOW IN USE (MARCH, 1904)

On Board Sea-going Vessels, NOT INCLUDING New Installations Building or Erecting.

French Navy	355,560	H. P.
English Royal Navy	966,300	"
Russian Imperial Navy	224,500	"
Japanese Imperial Navy	122,700	"
Austrian Imperial Navy	56,700	"
Italian Royal Navy	13,500	"
Chilian Navy	26,500	"
Argentine Navy	13,000	"
The "Messageries Maritimes" Company	87,600	"
Chemins de fer de l'Ouest: (The French Western Railway Co.) Steamships plying between Dieppe and Newhaven	18,500	"
Total Horse Power of Boilers in Use	1,884,860	

Societé Anonyme des Etablissements Delaunay Belleville

CAPITAL: 6,000,000 FRANCS

Works and Dock Yards of the Ermitage at Saint-Denis, (Seine), France. **Telegraphic Address: Belleville, Saint-Denis-Sur-Seine**

Generated on 2024-07-26 21:31 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from NEW YORK PUBLIC LIBRARY

WANTED and FOR SALE Department.

FOR SALE.

Steam Yacht for Sale.

Steam Yacht "Huntress," built in 1880, now in first-class repair; $1,000 repairs to hull last fall. Carries 210 passengers. Will make 11 miles an hour all day; economical to run. Cost $18,000. Write for particulars C. S. Cadwallader, Secretary Smith, Davis & Co., Buffalo, N. Y. Aug. 11

Steam Barge J.G. Nichols.

Length 106 ft., beam 22 ft.
Engine 10 by 20 by 11.
Boiler 8 ft. 6 in. long, 48 in. dia.
Steam pressure 137 lbs.
Engine and boiler in first-class shape. Steam hoister and derrick forward.
Will sell cheap to quick buyer.
Address Walter V. Metcalf, 93 Eliot St., Cleveland. Aug. 4

For Sale—A Bargain $20.000.

Cost $25,000 within last year. Original cost $100,000. A2 Wooden steamer, first class condition; entirely rebuilt; 206 ft long, 33 ft. beam. Two decks and gangways. Top deck 113 ft clear between cabins Boilers, engines, etc , in first class condition. Can carry grain, package freight, coal, ties, etc. Package freight and boom hoist Can be seen at Buffalo or Chicago Address R. S. Hicks, 44 King St., Toronto, Can. tf

Submarine Boat for Sale.

New submarine drill boat for sale. Hull 72 ft. by 24 ft., 5 ft. sides. Enquire of Hickler Bros., Sault Ste. Marie, Mich. tf

FOR SALE.

For Sale—Tug Jim Pullar and Scow.

Tug—built in 1894; 61 ft. long; 15 ft. beam Water tube boiler. Compound condensing engine. Strong and seaworthy.

Scow—five years old. Excellent construction; 132 ft. long; 29½ ft wide at center, 26 ft. wide at ends. Platform style, with stake pockets.

Tug and Scow recently overhauled and are in good condition May be seen at Washburn, Wis., dock.

Address, Fowler-Jacobs Co, Fisher Building, Chicago. Aug 11

Steamship Atlantic for Sale.

American build, Canadian register; twin screws. Registered tonnage, 565 gross, 232 net tons. Loaded draught, 13 ft. aft, 12 ft. forward Boiler built in 1891. Consumption of fuel per 24 hours about 5 tons. Good tower. Capacity about 400 tons of coal. For sale cheap for cash or on time. Can be inspected at any time at Quebec For further particulars apply to S S. Lester, 83 Dalhousie St., Quebec Can. Aug. 18

Marine Grocery for Sale.

Established twenty years Have contracts with most of the large steamship lines for this season. Must sell out at once on account of health. Address Box 71 Marine Review, Cleveland, O. t f

FOR SALE.

Marine Boiler for Sale.

Scotch marine boiler 11 ft. diameter, 13 ft. long; two furnaces; allowed 120 lbs. steam. Practically new. Address Box 69, Marine Review. Cleveland. tf

WANTED.

An Instructor in Ship Drawing.

Wanted—An instructor in Ship Drawing, Hydraulics of Shipbuilding and assistant in measurement of power. Must be high grade graduate of technical college with drafting room experience on hull work. Send application, references and minimum salary demanded to Professor of Mechanical Engineering, 357 Market Street, Bethlehem, Pa. Aug. 4

Wanted.

Tugs and Yachts to build. Will go and build elsewhere If necessary. Thomas Thurston & Son, Alexandria Bay, N Y. Aug. 18

Sealed proposals will be received at the office of the Light House Engineer, Buffalo, N. Y., until 11 o'clock a. m., August 10, 1904, and then opened, for repairing foundation of Cleveland West Breakwater East End Light Station, Ohio, in accordance with specifications, copies of which, with blank proposals and other information may be had upon application to First Lieutenant P. S. BOND, U. S. A., Engineer. Aug. 4

U. S. Engineer Office, Duluth, Minn., July 8, 1904. Sealed proposals for building vessel yard and removing buildings at Duluth, Minn., will be received here until noon, Aug. 8, 1904, and then publicly opened Information on application. CHAS. L. POTTER Capt., Engineers. Aug. 4

Yacht for Sale.

For Sale—Schooner-rigged steam yacht Ruth, 73 ft. long, 13 ft. wide, 5 ft. draught. Boiler used 13 months; 12x12 salt water condensing engine in fine condition all copper piping. Can run 12 miles an hour. Has crew's quarters, galley, large stateroom and main cabin fully equipped. Two new boats, sails, awnings, cannon. etc. Engine and condenser alone worth the price. For quick sale $1,500. C. E. Kremer, 171 La Salle St., Chicago. Aug. 4

For Sale or Trade.

Freight and passenger for sale or will trade for one somewhat larger. Licensed to carry 279 passengers and is of 257 gross tons; 134 ft. long, 27 ft. beam and 7 ft. deep. Rated A 1½ Well fitted for accommodation of passengers and for handling of freight. Speed 12 to 13 miles per hour. Address Box 72, Marine Review, Cleveland Aug 25

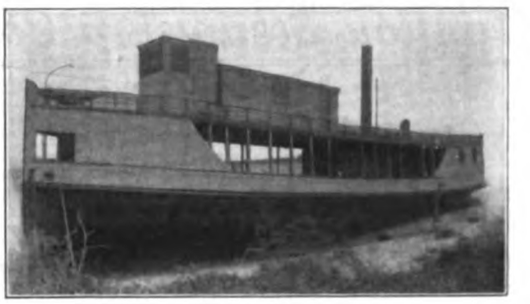
Steam Yacht Catherine.

FOR SALE—Length 78 ft., beam 18 ft , triple expansion engines, water tube boiler, allowed 200 lbs ; electric light, search light, mahogany deck house 9 by 16, power launch, complete outfit, all in first-class condition. One of the best family cruising yachts on the Lakes. Inquire Wickes Bros , Saginaw, Mich. Aug.4

FOR SALE—Steamer Isaac Lincoln, built 1898, rated A 1*. Carries 350 M ft. of lumber or 500 tons coal on 10½ ft. draught. Equipped with electric lights, steam steering gear, steam hoist, stockless anchors and is a good tower.

Also barge Robinson. Rated A 2. Carries 550 M ft. of lumber or 800 tons of coal on 11 ft. draught.

For further particulars address A. F. Price. Fremont, O. Aug. 11



STEAMER C. W. LIKEN.

FOR SALE Freight and passenger steamer C. W. Liken. Rebuilt in 1904; nearly all new. Length 79 ft., beam 18 ft., draught 5 ft., loaded. High pressure engine 12 by 12; Tubular boiler, good condition, allowed 80 lbs. steam. Price for quick sale, cash, or time approved notes, 7 per cent. interest, $1,800, about one-third value. Boat can be seen at Bay City. For further particulars address A. Wheeler, Bay City, Mich. Aug. 4

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

THE CLEVELAND & BUFFALO TRANSIT COMPANY.

UNPARALLELED NIGHT SERVICE.

NEW STEAMERS "CITY OF BUFFALO" AND "CITY OF ERIE"

Both together being, without doubt, in all respects the finest and fastest that are run in the interest of the traveling public in the United States.

TIME CARD. DAILY INCLUDING SUNDAY. CENTRAL STANDARD TIME.

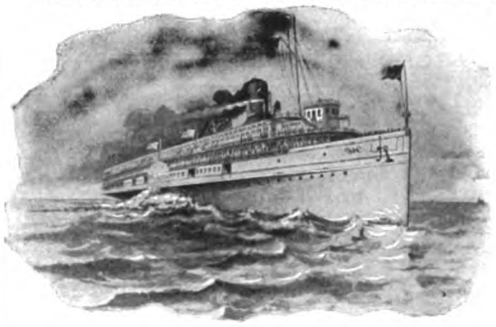
Leave CLEVELAND 8 p. m. Arrive BUFFALO 6:30 a. m.
" BUFFALO 8 p. m. " CLEVELAND 6:30 a. m.

ORCHESTRA ACCOMPANIES EACH STEAMER.

Connections made at Buffalo with trains for all Eastern and Canadian points; at Cleveland for Toledo, Detroit and all points West and Southwest. Tickets reading over L. S. & M. S. Ry. will be accepted on this Company's Steamers without extra charge. Special Low Rates Cleveland to Buffalo and Niagara Falls every Saturday Night, also Buffalo to Cleveland. Ask Ticket Agents for tickets via C. & B. Line. Send four cents for illustrated pamphlet.

W. F. HERMAN, G. P. A., Cleveland, O.

REFRESHING LAKE TOURS VIA THE **D. & C. LINE** STEAMERS.

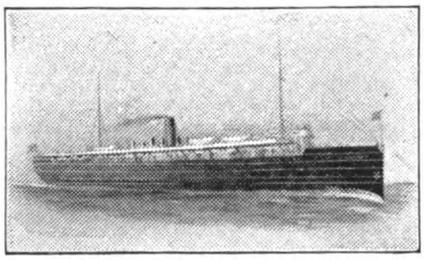


FOUR TRIPS PER WEEK BETWEEN TOLEDO AND MACKINAC.

DAY AND NIGHT TRIPS BETWEEN CLEVELAND AND DETROIT.

FOR PARTICULARS, ADDRESS
A. A. SCHANTZ, GEN. SUPT. AND P.T.M., DETROIT, MICH.

Northern Michigan Transportation Co.



Chicago, Ludington, Manistee, Charlevoix, Petoskey, Harbor Springs, Mackinac Island.

STEAMSHIPS MISSOURI, ILLINOIS and KANSAS.

Our 1904 Booklet mailed free on application. Address,

R. F. CHURCH, G. P. A. - Chicago.

GOODRICH LINE STEAMERS

NINE BOATS.

Passenger and freight service between Chicago, Milwaukee, Racine, Sheboygan, Manitowoc, Green Bay Ports, Grand Haven and Muskegon.

H. W. THORP, Gen'l Mgr.

R. C. DAVIS, G. P. A.

General Office: CHICAGO, ILL.

United Fruit Co's Steamship Lines.

CARRYING FAST UNITED STATES AND FOREIGN MAILS.

First-Class Passenger Service to Jamaica.

Weekly Sailings from Boston and Philadelphia.

Summer Rate May 1st to October 1st. { One Way, $35 / Round Trip, $60

FOR FULL INFORMATION APPLY TO

DIVISION PASSENGER AGENT,

Long Wharf, Boston, or Pier 5, No. Wharves, Philadelphia.

The Niagara, St. Catharines & Toronto Railway & Navigation Co.

First class Passenger Service between Toronto, Niagara Falls, N.Y. and Buffalo.

Fast Freight Service to all points.

FOR FURTHER INFORMATION APPLY TO

H. DAVIS, G. P. A. W. N. WARBURTON, G. F. A.
E. F. SEIXAS, GEN MGR.

Manitou Steamship Co.,

"The Mackinac Line."

In service the famous steel constructed STEAMSHIP MANITOU.

Three times each week between Chicago, Frankfort, Northport, Charlevoix, Petoskey, Harbor Springs and Mackinac Island.

Passenger Service Exclusively.

Illustrated booklets, route and rate books, containing about **200 different combination tours** to select from, mailed free for the asking. Address

JOS. BEROLZHEIM, G. P. A., Chicago.

The Erie & Western Trans. Co.

ANCHOR LINE.

PASSENGER SERVICE Steamers.

India. China. Japan. Tionesta.

PORTS OF CALL.

Buffalo. Erie. Cleveland.
Detroit. Mackinac Island. Sault Ste. Marie.
Marquette. Houghton. Hancock.
Duluth.

FREIGHT SERVICE Steamers.

Alaska. Codorus. Mahoning. Schuylkill. Conestoga.
Muncy. Clarion. Delaware. Juniata. Lehigh.
Lycoming. Susquehanna. Wissahickon. Conemaugh.

PORTS OF CALL.

Buffalo. Erie. Cleveland. Detroit.
Sault Ste. Marie. Marquette. Houghton. Hancock.
Duluth. W. Superior Chicago. Milwaukee.

J. C. Evans, Western Manager, BUFFALO, N. Y.

Chas. E. Markham, General Passenger Agent, BUFFALO, N. Y.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

WARD LINE

THE NEW YORK & CUBA MAIL STEAMSHIP CO.

POPULAR ROUTE TO

CUBA, NASSAU, MEXICO

FINEST AND LARGEST STEAMSHIPS SAILING FROM NEW YORK TO OTHER THAN EUROPEAN PORTS. HOLDERS OF THE RECORD BETWEEN HAVANA AND NEW YORK — 1,240 MILES IN 61 HOURS.

FOUR SAILINGS EACH WEEK BETWEEN

NEW YORK and HAVANA.

WEEKLY SERVICE TO GUANTANAMO, SANTIAGO, MANZANILLO AND CIENFUEGOS, CUBA, PROGRESO, VERA CRUZ AND TAMPICO, MEXICO.

SEMI-MONTHLY SAILINGS TO

Nassau, N. P. Bahamas.

LOW RATES OF FREIGHT AND PASSAGE.

SEND FOR OUR SCHEDULES, RATES AND DESCRIPTIVE MATTER.

James E. Ward & Co.

GENERAL AGENTS

90 Wall Street, NEW YORK.

AMERICAN LINE

PLYMOUTH
CHERBOURG
SOUTHAMPTON

CALLING AT CHERBOURG WESTBOUND.

Sailing From New York Every Saturday at 9:30 a. m.

St. Louis (11,629 tons)	**St. Paul** (11,629 tons)
New York (10,798 tons)	**Philadelphia** (10,786 tons)

Special Express Train from Plymouth and Southampton to London and between Cherbourg and Paris.

RED STAR LINE

NEW YORK
ANTWERP
LONDON
PARIS

CALLING AT DOVER FOR LONDON AND PARIS.
Sailing Every Saturday at 10:30 a. m.

Finland (12,760 tons)	**Kroonland** (12,760 tons)
Vaderland (12,017 tons)	**Zeeland** (11,905 tons)

One of the Shortest Routes to Belgium, Holland, France, Germany, The Rhine, Switzerland and Italy.

9 Broadway, New York.

Broad and Sansom Sts., Philadelphia.
India Building, 84 State Street, Boston.
1306 F St., N. W., Washington, D. C.
219 St. Charles St., New Orleans
90-96 Dearborn St., Chicago.
Century Building St., Louis.
Guaranty Building, S., Minneapolis.
21 Post St., San Francisco.
375 Robert St., St. Paul.
41 King St., East Toronto.
17 St. Sacrament St., Montreal.

PIERS: 14 & 15 NORTH RIVER, FOOT OF FULTON ST., NEW YORK.

Mexican - American Steamship Co.,

The Rail and Water Route to Mexico, via New Orleans, La., and Galveston, Texas.

A. L. ROBY, Vice Pres't and Mgr. NEW ORLEANS, LA.

F. N. LUFKIN, Sec'y and Treas. NEW ORLEANS, LA.

General Offices: 632 Gravier Street.
New Orleans, La.

New Orleans-Tampico-Vera Cruz Line

S. S. NOR. **S. S. NORHEIM.**

Freight and passenger sailings every two weeks, connecting with all railways from Tampico and Vera Cruz for interior points.

L. PALMER, Agent, New Orleans, La.

GALVESTON - TAMPICO LINE

S. S. IRIS. **S. S. FARMAND.**

Weekly Sailings.

Fast freight service from the United States to Mexico, via Galveston at Tampico, connecting at Tampico with the Mexican Central Railway for all interior points.

W. H. RICHARDSON, Agent, Galveston, Texas.

BOSTON STEAMSHIP CO.

S. S. "SHAWMUT" S. S. "TREMONT" S. S. "LYRA"

Japan, South China and Manila Steamship Line

Operated in connection with the

Northern Pacific and Great Northern Railway Companies.

Monthly Passenger and Freight Service from Tacoma and Seattle, Washington.

New Twin-screw American Steamships of 10,000 tons register. Exceptionally large staterooms, all outside.

OWING TO THE GREAT SIZE OF THE SHIPS, AND THE IMMENSE CARGOES CARRIED IT HAS NEVER BEEN NECESSARY TO USE RACKS ON THE DINING TABLES.

Rates at any office of

NORTHERN PACIFIC RAILWAY.
GREAT NORTHERN RAILWAY.
CHICAGO, BURLINGTON & QUINCY RAILWAY.
THOMAS COOK & SONS, Tourists Agents.

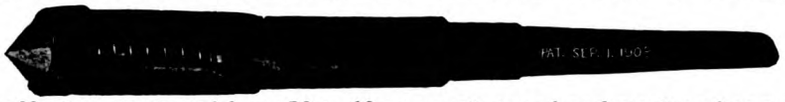
A. WINSOR, Pres. Boston, Mass.

F. WATERHOUSE, Agent, Seattle, Wash.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

STAR CONDENSER PACKING TOOL.

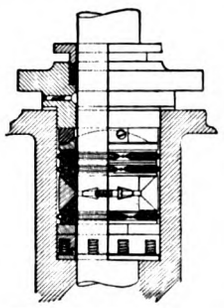
J. H. Schlosser Patent.



Manufactured for ⅝-in., ¾-in. and ⅞-in. tubes.

This tool effects a saving of from 50 to 60 per cent. over hand work and any other tool.

Exclusively Manufactured by **MATTESON & DRAKE, 706-707 Bourse, PHILADELPHIA.**



Katzenstein's Self-Acting Metal Packing

For PISTON RODS, VALVE STEMS, etc. of every description for Steam Engines, Pumps, etc., etc. Adopted and in use by the principal Iron Works and Steamship Companies in this and foreign countries.

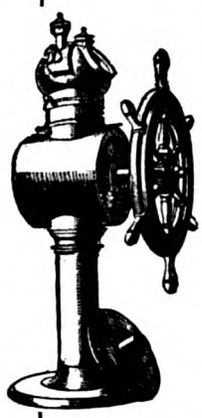
FLEXIBLE TUBULAR METALLIC PACKING, for slip-joints on Steam Pipes, and for Hydraulic Pressure; also METAL GASKETS for all kinds of flanges and joints.

For full particulars and reference, address

L. KATZENSTEIN & CO.

GENERAL MACHINISTS, BRASS FINISHERS, ENGINEERS' SUPPLIES.

358 West street, New York.



Marine Manfg. & Supply Co.,

157 and 158 South St., New York.

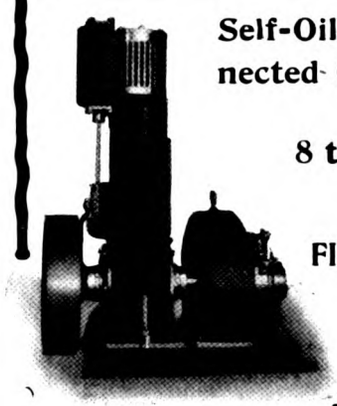
Ship Fittings and Supplies, Capstans, Windlasses, Steering Apparatus, Engine Room Telegraphs, Brass Air Ports, Dead Lights, Pumps, etc.

Catalogue A—Air Ports, Ventilators, etc.
Catalogue B—Windlasses Pumps, etc.
Catalogue C—Steering Apparatus.
Others in course of preparation.

RELIANCE MFG. CO.

MARINE GASOLINE ENGINES 4 to 150 H.P., 2 to 6 cylinders. Lightest weight. Simplest. Highest Efficiency. :: :: :: Special Designs for Auto Boats.

CITY ISLAND, N. Y. CITY.



Self-Oiling, Direct Connected Generating Sets

from

8 to 25 K. W.

FISHER ELECTRICAL WORKS,

DETROIT, MICH.

THOS. DREIN & SON,

TATNALL ST. BELOW RAILROAD, WILMINGTON, DEL.

BUILDERS OF METALLIC LIFE BOATS AND RAFTS, YACHTS AND PLEASURE BOATS.

LIFE PRESERVERS.

OUTFIT FOR LAKE STEAMERS A SPECIALTY.

Neversink Cork Jackets and Life Belt.

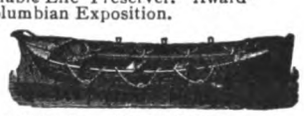
Warranted 24 pounds. Buoyancy and full weight of Cork, as required by U. S. Inspectors.

Consolidated Cork Life Preservers. Ring Buoys and Fenders.

SAFEST. **CHEAPEST.**

Approved and adopted by U. S. Board of Supervising Inspectors. Also adopted by the principal Ocean, Lake and River Steamer Lines as the only Reliable Life Preserver. Awarded four Medals by World's Columbian Exposition.

METALLIC and WOODEN LIFE BOATS.

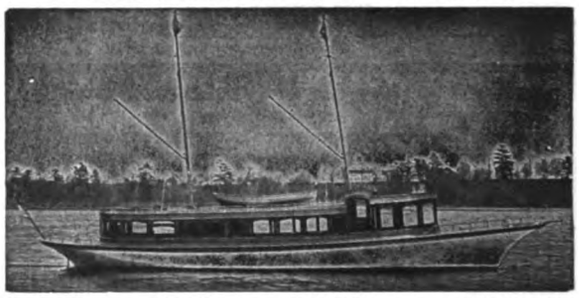


Metallic Life Rafts. Marine Drags.

Manufacturers of Woolsey's Patent Life Buoy—the lightest, cheapest and most compact life raft known.

DAVID KAHNWEILER'S SONS.
437 Pearl Street, New York City.
Send for Illustrated Catalogue.

A TRUSCOTT BOAT.



SIMPLE. SAFE. SPEEDY. RELIABLE.

It may be possible to build better and safer boats but it hasn't been done yet. We send a completely illustrated catalogue and price list free, which tells you all about boats and why Truscott Boats Excel.

TRUSCOTT BOAT MFG. CO. ST. JOSEPH, MICH.

PHOSPHOR BRONZE.

REG TRADE MARKS

THE PHOSPHOR BRONZE SMELTING CO. LIMITED, 2200 WASHINGTON AVE., PHILADELPHIA.

"ELEPHANT BRAND PHOSPHOR-BRONZE"

INGOTS, CASTINGS, WIRE RODS, SHEETS, ETC.

—DELTA METAL—

CASTINGS, STAMPINGS AND FORGINGS.

ORIGINAL AND SOLE MAKERS IN THE U.S.

DELTA METAL

British Admiralty Charts

The latest Editions of Charts, Plans and Sailing Directions Published by the British Admiralty. ** Can be obtained from Admiralty Agent by Appointment.**

J. D. POTTER,

145 MINORIES, LONDON, ENGLAND.

OFFICIAL CATALOGUE OF CHARTS (380 pages) 1s.

An Abridged Catalogue of Charts of Nautical Books (free on application.)

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

The Wm. Cramp & Sons Ship and Engine Building Co.

PHILADELPHIA, PA.

BRASS FOUNDRY

PARSONS MANGANES BRONZE

PARSONS WHITE BRASS

Propeller Castings of all kinds a specialty.
Castings and Ingots for marine and land purposes of high tensile strength and best composition

ROACH'S SHIP YARD.

Delaware River Iron Ship-Building & Engine Works Chester, Pa.

Builders of Steamships and Marine Machinery.

SHIP-BUILDING IN ALL ITS BRANCHES.

Fore River Ship and Engine Co.

Successors to Fore River Engine Co.

Steel Ship and Marine Engine Builders.

CONTRACTORS FOR
U. S. Torpedo Boat Destroyers Lawrence and Macdonough.
U. S. Protected Cruiser Des Moines.
U. S. Battleships New Jersey and Rhode Island.
U. S. Steam Light-Vessel No. 73.

OFFICE AND WORKS, QUINCY, MASS. U. S. A.

The Atlantic Works,

Builders of Steamships, Steam Yachts, Tow Boats Etc

EAST BOSTON MASS.

Marine Engines, Boilers and Tanks.
Heavy Machinery and Plate Iron Work
Three Marine Railways.

A NEW MAP

showing in detail the entire

WATER FRONT OF BUFFALO, N. Y.

Giving Soundings, Principal Buildings, Railroad Connections, Etc. A copy will be forwarded to responsible parties for inspection, on request.

Price, Cloth Backed, $7.00.

Marine Review, 39-41 Wade Bldg., Cleveland, O.

The Allen Dense-Air Ice Machine

Contains no chemicals, only air. Proven by many years' service in the tropics on United States men-of-war, steam yachts and passenger steamers.
A HUNDRED ARE IN DAILY SERVICE ON STEAMERS.

H. B. ROELKER, 41 Maiden Lane, NEW YORK
Consulting and Constructing Engineer. Designer and Manufacturer of Screw Propellers.

THE LOCKWOOD MANUFACTURING CO.

EAST BOSTON, MASS.

ENGINEERS AND MACHINISTS.

Builders of STEAMSHIPS, TOW BOATS and MARINE ENGINES
REPAIRING OF HULLS AND MACHINERY.

W. & A. FLETCHER CO.

NORTH RIVER IRON WORKS.

MARINE ENGINES, BOILERS, Etc.

Hudson, 12th and 14th Streets, Hoboken, N. J.
Take Ferry from foot of West 14th St., N. Y.

The Shipowners Dry Dock Co.

Chicago, Ill.

Building and Repairing of Steel and Wooden Ships with economy and dispatch.
Yard and Dry Docks: Halstead St. and North Branch
Largest Dry Dock: 480 ft. on keel blocks.

Office, 381 No. Halstead St. Phone, North 1658.

MANITOWOC DRY DOCK COMPANY

SHIP BUILDERS

Facilities for Repairs to Steel and Wooden Vessels.

MANITOWOC - WIS.

Office Phone { Long Distance 423. Zenith 423.
Residence { Long Distance 719-4. Zenith 846.

GOGEBIC STEAM BOILER WORKS,

J. F. DACEY, Manager.

Boilers, Tanks and Sheet Iron Work,
Boiler Fronts and Grate Bars.

SPECIAL ATTENTION GIVEN TO REPAIRING.

Office and Works: 409 LAKE AVE. SOUTH. DULUTH, MINN.

MASTERS AND ENGINEERS ATTENTION!

When in need of Repairs to Engine or Boiler, Call on

THE MARINE IRON CO., Duluth, Minn.

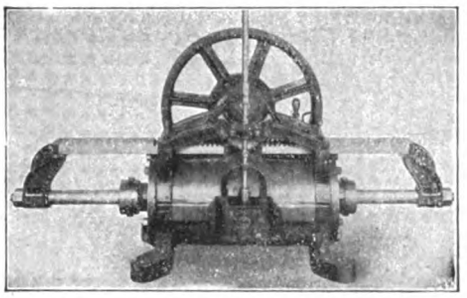
FOR SHOP, FOUNDRY, BLACKSMITH AND BOILER WORK.
SUPPLY BOAT AVAILABLE AT ALL HOURS.
Foot of 12th Ave., on the Duluth Dredge & Dock Co. Dock
Old Phone No. 1270.

ICE-CRUSHING CAR FERRIES OF THE GREAT LAKES.

Complete Structural Description with Line Drawings and Photos of the Various Types in the Ship Building Edition of Marine Review. Price 25 cents.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

A STEAM STEERER

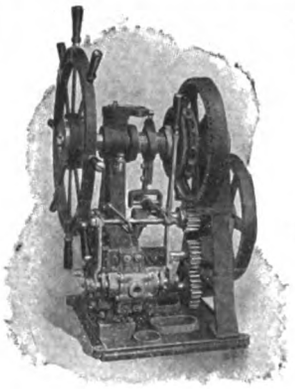


DIRECT
—and—
POSITIVE
QUICK ACTING.

Especially adapted for Steam Yachts, Ferryboats, Lake, Ocean and Harbor Tug Boats.

Send for Catalogue and Particulars.

MOULTON STEERING ENGINE CO., 17 STATE STREET, NEW YORK CITY.



THE
Dake Pilot House Steam Steerer.

A Simple, Compact and Durable Machine.
Occupies Small Floor Space.
Write for descriptive circulars and prices.

MANUFACTURED BY
The Dake Engine Co.
GRAND HAVEN, MICH.

THE ROBERTS

Safety Water Tube Boiler Co.

MANUFACTURERS OF

High Grade Marine Water Tube Boilers.

Generators of the Highest Quality of Steam.

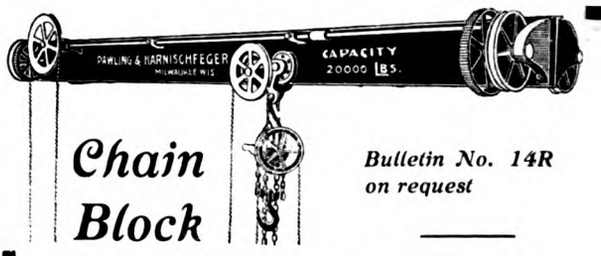
Nearly 1500 in use.

Send for Circulars and Stock Sheet.

Works:
RED BANK, N. J.
Phone, 49 Red Bank.

Main Office:
39 Cortlandt St.,
NEW YORK, N. Y., U. S. A.
Phone, 599 Cortlandt.

Cable Address;
"BRUNIVA."



Chain Block

Bulletin No. 14R on request

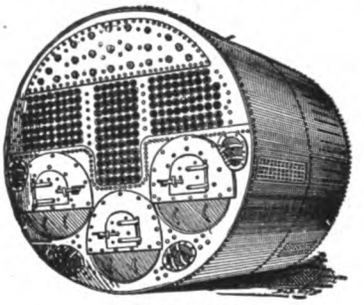
TRAVELING CRANES

PAWLING & HARNISCHFEGER
Clinton and South Water Streets, MILWAUKEE, WIS., U. S. A.

"FOREST CITY" MARINE PAINT

A Paint Made Expressly for This Purpose
The Forest City Paint & Varnish Co.,
CLEVELAND, OHIO.

Northwestern Steam Boiler & Mfg. Co.



DULUTH, MINN.

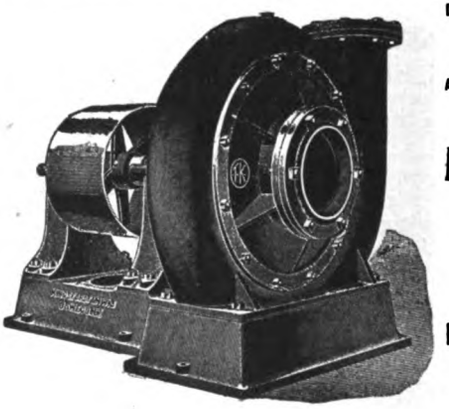
MANUFACTURERS OF

Boilers, Engines and Machinery.

Special facilities for Marine Work. Repairs promptly attended to Night or Day.

We carry a complete line of Marine and Engineers' Supplies.

TELEPHONES:
OFFICE AND WORKS, 615.
Residence Calls:
M. A. RYAN, Pres. and Gen'l Mgr., 776 R.
J. H OPPERMAN, Secretary, 879 R.
E. KRIZ, Superintendent, 557 M.



DREDGING, WRECKING CIRCULATING AND BALLAST PUMPS.

MARINE BOILERS.

Kingsford Foundry & Machine Works,
OSWEGO, N. Y.

Patterson's Nautical Encyclopedia.

PRICE, $3.00

Is in all respects a work up to date, correct as to every term known to the shipping world. Sent upon approval. Carriage prepaid.

THE MARINE REVIEW CLEVELAND.

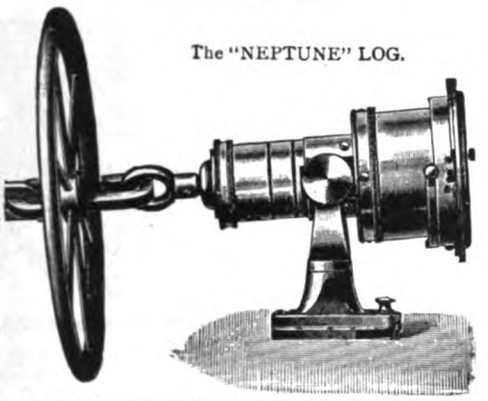
Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

THOMAS WALKER & SON,

BIRMINGHAM, ENGLAND.

THE "NEPTUNE SHIP-LOG With Ball Bearings for HIGH SPEEDS.

Also makers of the "CHERUB" and "HARPOON" SHIP-LOGS.



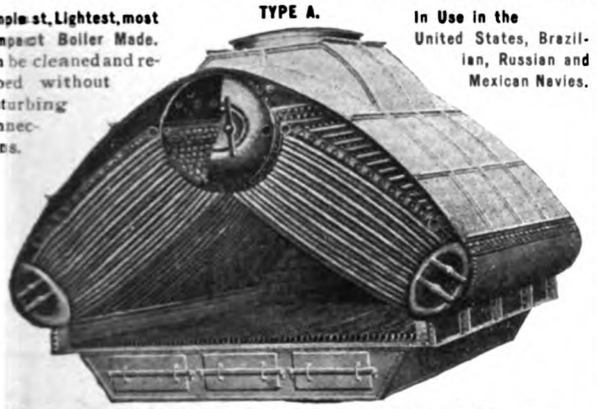
The "NEPTUNE" LOG.

MAKERS TO THE BRITISH NAVY.

THE MOSHER PATENT WATER TUBE BOILER,

Simplest, Lightest, most Compact Boiler Made. can be cleaned and re-tubed without disturbing connections.

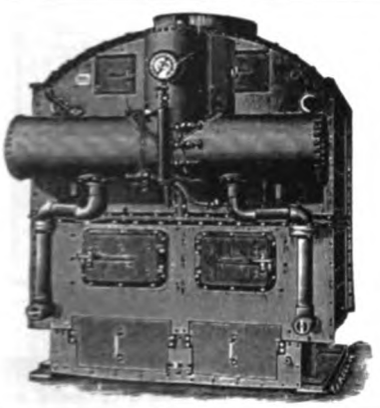
TYPE A.



In Use in the United States, Brazilian, Russian and Mexican Navies.

As many as forty tubes can be cleaned or renewed through a single hand-hole; has greater steam and water capacity than any other water tube boiler. Send for descriptive catalogue.

MOSHER WATERTUBE BOILER CO., NO. 1 BROADWAY, N. Y.



250 STEAM VESSELS

Now Equipped With

ALMY'S PATENT SECTIONAL Water Tube Boilers

Bear Evidence of Their

Excellent Qualities

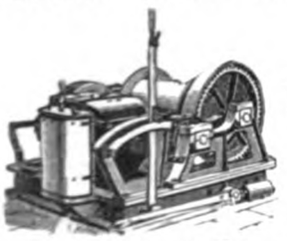
Almy Water-Tube Boiler Co.

PROVIDENCE, R. I.

LIDGERWOOD HOISTING ENGINES.

Over 22,000 in use.

ELECTRIC HOISTS Specialty adapted for Docks, Warehouses and Steamships.



Lidgerwood Electric Hoist.

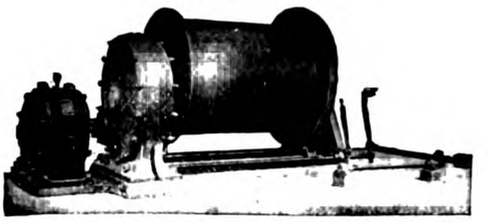
Lidgerwood Miller Marine Cableway

will transfer Coal, Ammunition Supplies, etc., from ship to ship at sea.

SEND FOR CATALOGUE.

LIDGERWOOD MFG. CO.,
96 LIBERTY ST., NEW YORK.

Westinghouse Motors.



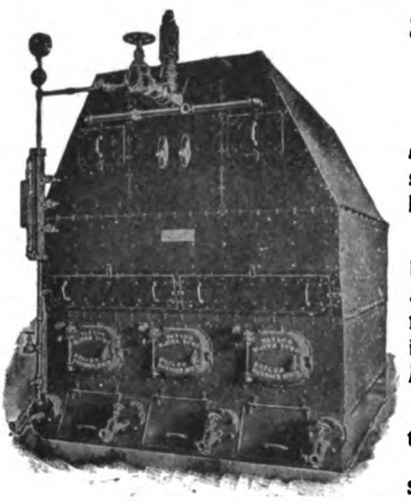
For All Power Purposes.

Westinghouse Electric & Mfg. Co

Sales Offices in all Large Cities. Pittsburgh, Pa.

For Canada: Canadian Westinghouse Co., Limited, Hamilton, Ontario.

Taylor Water Tube Boiler Co.



322 Franklin St., DETROIT, MICH.

Vertical Tubes, sectional, large steam space and liberating area.

Fire box, combustion chamber, and course for the furnace gases similar to the Scotch Marine.

Free circulation type.

Send for full description.

The MARTIN-BARRISS CO.

IMPORTERS AND MANUFACTURERS OF

MAHOGANY, WHITE MAHOGANY

AND ALL NATIVE CABINET WOODS

High Grades of Kiln Dried Woods for Cabin Work and Inside Trim.

White Oak Timbers and Plank

Constantly on Hand and Sawed to Order on Short Notice,

654 SENECA ST. CLEVELAND, O.

CRANE VALVES

ESTABLISHED 1855

Questions and Answers for Marine Engineers.

By THEO. LUCAS.

Sent postpaid to any address for $2.00.

Marine Review, 39-41 Wade Bldg. Cleveland, O.

Generated on 2024-07-26 21:35 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

CHARLES E. PECK. WILLIAM A. PRIME.

CHAS. E. & W. F. PECK,

Insurance Brokers. Average Adjusters.

ESTABLISHED 1870.

NEW YORK, 58 William Street,
CHICAGO, 1115-16 Royal Insurance Bldg.
CLEVELAND, 1107-8 Williamson Bldg.

REPRESENTED BY
C. T. BOWRING & CO., (Insurance) LTD.,
5 and 6 Billiter Ave., LONDON,
and at "LLOYD'S" LONDON.

HULLS and CARGOES.

We place insurances in the most advantageous markets, employing, in the interest of our clients and with equal facility, all Foreign and Home companies, at the best procurable rates and terms.

We Represent Only the Assured.

NEW HARBOR CHARTS OF THE LAKES.

Following is a list of harbor charts recently issued from the United States Lake Survey Office, all in colors: Duluth and Superior Harbors, Two Harbors, Ashland, Marquette, Milwaukee, Chicago, Muskegon, Charlevoix, Michigan City, Toledo Sandusky, Cleveland, Lorain, Fairport, Ashtabula, Conneaut, Erie, Dunkirk, Buffalo and Oswego.

For sale by THE MARINE REVIEW,

39-41 WADE BUILDING, CLEVELAND, O.

The Only Standard American Classification of Shipping.

Has Authorized Agents in all the principal ports of the world to protect the interests of its patrons. Vessels built under its rules, or holding certificates of class in this Record of Shipping will, with their Cargoes, insure at lowest rates. Office, 66 Beaver Street, New York.

A. A. RAVEN, President. W. R. T. JONES, Vice President,
W. H. H. MOORE, Treasurer. W. IRVING COMES, Secretary

The Donnelly Salvage and Wrecking Co., Ltd.,

JOHN DONNELLY, SR., Pres.
JOHN DONNELLY, JR., Vice-Pres.
H. B. FOLGER, Treas.
THOS. DONNELLY, Secy.

KINGSTON ONT.

DIVERS, STEAM PUMPS, TUGS, Etc.

SUPPLIED ON SHORTEST NOTICE.

GREAT LAKES REGISTER

FOR THE
CLASSIFICATION OF STEEL AND WOODEN VESSELS.

Estb. 1828 Estb. 1898

COMBINED AND ISSUED IN CONNECTION WITH

BUREAU VERITAS

INTERNATIONAL REGISTER OF SHIPPING.

THE RATINGS OF GREAT LAKES REGISTER GO BEFORE AND ARE ACCEPTED BY THE LEADING UNDERWRITERS OF AMERICA AND EUROPE. VESSELS BUILT UNDER THE SUPERVISION OF ITS SURVEYORS WILL RECEIVE SPECIAL RATING, AND WILL ALSO BE PUBLISHED IN BUREAU VERITAS INTERNATIONAL REGISTER OF SHIPPING.

PLANS AND SPECIFICATIONS FURNISHED.

GREAT LAKES REGISTER SURVEYORS ARE ESTABLISHED AT ALL THE PRINCIPAL PORTS ON THE GREAT LAKES.

F. D. HERRIMAN, SURVEYOR GENERAL,
320-322 Perry-Payne Building. - - - CLEVELAND, O.

INSURANCE

GEO. L. McCURDY
169 Jackson Boulevard
CHICAGO ILLINOIS
Direct Representative of Leading American and Foreign Underwriters

HULLS AND CARGOES

CRANE FITTINGS

ESTABLISHED 1865.

THE FRANKFORT Marine, Accident and Plate Glass INSURANCE CO.

of FRANKFORT-ON-THE-MAIN, GERMANY.

Employers Teams and Public Liability, Elevator Insurance, Workmen's Collective, Individual Accident.

For the security of Policyholders in the United States of America, a deposit has been made in the States of Massachusetts and New York of $400,000.00 in United States Bonds. UNITED STATES DEPARTMENT,
100 WILLIAM ST., NEW YORK, N. Y.
F. G. VOSS, Manager and Attorney.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Thirty Years' Experience building

Engines
and
Propeller Wheels.

H. G. TROUT,
King Iron Works,
226 Ohio St.,
BUFFALO, N. Y.

SHERIFFS
MANUFACTURING CO.
Manufacturers of
PROPELLER
WHEELS
Marine Engines
and Repairs.
Milwaukee, Wis.
Phone S. 163

GEO. STRATFORD OAKUM CO.
JERSEY CITY, NEW JERSEY.
Established 1860

Manufacturers of all grades of
Oakum
Spun Cotton

FOR SALE AT SHIP CHANDLERS EVERYWHERE.

• • Buffalo • •
Wrought Steel Ranges
Are the Best.

Steamboat and Barge Ranges with Rotary Grates.
No Cog Wheels to Warp or get out of order.
Don't take our word for it but ask some one using them.

Russell & Watson,
BUFFALO, N. Y.
General Steamboat Work
Send for Catalogue.

AGENTS—Topky Bros., Ashtabula Harbor, Ohio.
H. C. Weber & Co., Detroit, Mich.
John Black, So. Chicago, Ill.
Pritzlaff Bros., Milwaukee, Wis.

AIDS TO NAVIGATION

are of vital importance to vessel interests.

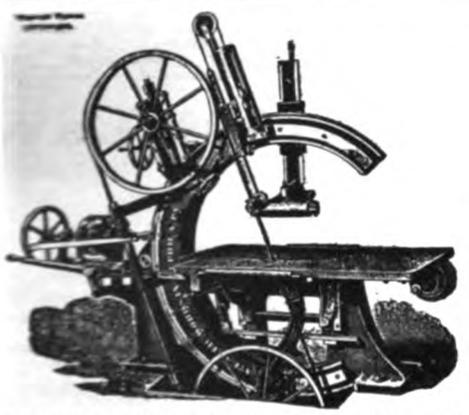
SCHERZER ROLLING LIFT BRIDGES

aid navigation and meet with the approval of all vessel interests, because of the wide and unobstructed channel provided for navigation, enabling vessels to pass easily and rapidly through the draw.

The SCHERZER ROLLING LIFT BRIDGE Co.,
Main Offices: 1616 Monadnock Block,
CHICAGO, U. S. A.

Holzapfel's
Danboline and Lagoline Compositions
are made expressly for bunkers, holds, peaks and outsides of steel vessels. For prices and particulars apply to
JAMES NACEY, 208 Western Reserve Building,
AGENT FOR THE GREAT LAKES DISTRICT. *Cleveland, O.*
Main office: Holzapfel's American Compositions Co., 18 B'way, New York.

TEXT BOOK OF
NAVAL ARCHITECTURE,
BY J. J. WELCH.
$1.50.
MARINE REVIEW, - - CLEVELAND.



ADJUSTABLE BEVEL BAND SAW—Will bevel both ways at 45 degrees. Power Movement to change angles. Power feed in three directions.

ESTABLISHED 1869. *INCORPORATED 1896.*

ATLANTIC WORKS INCORPORATED,
Successors to Berry & Orton Company.
2870-72-74-76-78 Gray's Ferry Road, PHILADELPHIA, PA.
MANUFACTURERS OF
MACHINERY FOR WORKING WOOD
FOR USE IN
Ship Yards, Car Shops, Railroad Shops.
SEND FOR CATALOGUE.
Hollow Chisel Mortisers.
ESTIMATES FURNISHED.
Car Sill Dressers.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

We offer an

Engine for Direct-Connected Electric Plants.

which we can guarantee

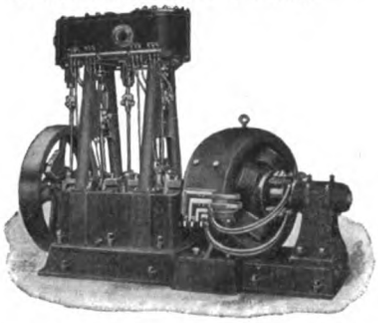
to stand up under extreme changes from no load to full load, and to REGULATE TO PERFECTION.

That its construction is strong is self-evident.

The shaft, rods, valve stems and other working parts are made of forged steel.

Every bearing is automatically lubricated.

In finish it is all that can be desired.



WRITE FOR FULL PARTICULARS AND TESTS.

John E. Thropp & Sons' Co.

TRENTON, N. J.

Chas. Cory & Son,

Manufacturers of

Mechanical and Electrical Telegraphs and Indicators.

Engine Bells and Electric Call Bells.

278-279 Division St.

NEW YORK CITY.

A. J. MORSE & SON.

DIVING APPARATUS

140 CONGRESS ST. BOSTON.

ORAM FIX. ESTABLISHED 1860. J. W. FIX.

S. FIX'S SONS,

SUCCESSORS TO S. FIX & SON

Steam Flue Welding Works

Our Work Stands Government Test.
Our Welds are Perfectly Smooth.
Write us for Prices.

COR. LEONARD AND WINTER STS. Cleveland, O.

OF VITAL INTEREST TO ENGINEERS.

There is a great amount of valuable information in the new and revised edition of DIXON'S

"GRAPHITE AS A LUBRICANT."

Write for a copy. 77-C.

Joseph Dixon Crucible Co., Jersey City, N. J.

WATER FILTERS REGULATORS & ENGINES

We make **Pressure Regulating Valves** for all purposes, steam or water.

Our **Feed-Water Filter** will keep oil out of your boiler.

We can interest you if you use a condenser.

Water Engines for Pumping Organs

Keep Oil out of your Boiler with the

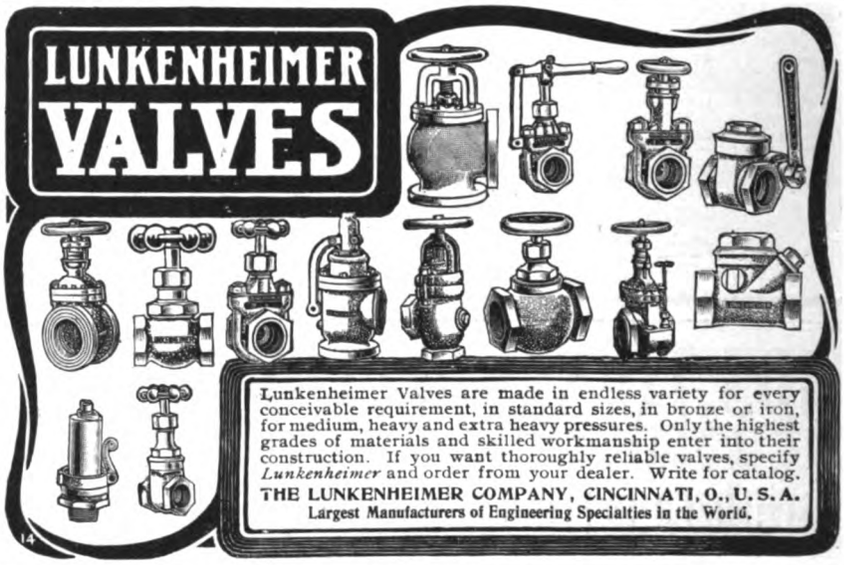
FEED-WATER FILTER

For Marine and Land Service

Two of these Filters are in use on the Oceanic.

THE ROSS VALVE CO. TROY N. Y.

LUNKENHEIMER VALVES



Lunkenheimer Valves are made in endless variety for every conceivable requirement, in standard sizes, in bronze or iron, for medium, heavy and extra heavy pressures. Only the highest grades of materials and skilled workmanship enter into their construction. If you want thoroughly reliable valves, specify *Lunkenheimer* and order from your dealer. Write for catalog.

THE LUNKENHEIMER COMPANY, CINCINNATI, O., U. S. A.

Largest Manufacturers of Engineering Specialties in the World.

14

LEBANON CHAIN WORKS,

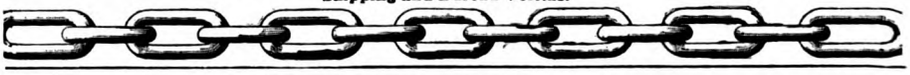
LEBANON PA.

Manufacturers of HAND MADE CHAINS of all grades.

SHIPS' CABLES, DREDGE CHAINS, CRANE CHAINS, BLOCK CHAINS.

Large chains furnished side or end welded. High grade tested chains a specialty.

We manufacture our own iron. We are licensed testers for Lloyds Association, American Bureau of Shipping and Bureau Veritas.



Hand Book of Admiralty Law

By ROBT. M. HUGHES.

$3.75.

Marine Review, - - Cleveland, O.

John D. Gilchrist, Pres. John Marron, Sec'y.
John A. Flajole, Gen'l Mgr.

THE FOREST CITY BOILER CO.

Marine Work a Specialty.

264 Merwin St. Tel. Main 1886

CLEVELAND, OHIO.

STEEL SHIPS: Their Construction and Maintenance.

A manual for ship builders, ship superintendents, students and marine engineers.

BY THOMAS WALTON.

Price $5.50.

The Marine Review, Cleveland, O

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google

Digitized by Google

Original from NEW YORK PUBLIC LIBRARY

RITCHIE LIQUID COMPASS

The Standard Liquid Compass Used Exclusively by the United States Navy For Over 35 Years.

Over 25,000 Used In Merchant Service.

Made in all sizes and styles, from 2 to 12 inches diameter of card. All compasses made by us have our name printed below the North point, or prominently upon the card. NONE OTHER ARE GENUINE. Latest form with four or six needles, the best instrument for iron ships. For sale by ship chandlers and nautical instrument dealers.

CATALOGUE FREE.

E. S. RITCHIE & SONS,

Manufacturers of Nautical and Physical Apparatus,
BROOKLINE, MASS., U. S. A.

Steamboat Fuel at Ashtabula.

Large Supplies of Best Quality.

Lighter Carrying Different Grades at all Times.

Fuel Scow with elevators and discharging spouts. Storage of 800 tons. Discharges 250 tons an hour into steamers while unloading cargo.

***M. A. Hanna & Co.,* Miners and Shippers,**

Main Office, Perry-Payne Bldg., Cleveland.

STEAMBOAT FUEL

at TOLEDO and HURON.

IRONVILLE DOCK & COAL CO.,

429 Spitzer Building, Toledo, Ohio.

Office, Main 1513. : : : Bell Phones : : : Dock, East 63.

Coal of Best Quality MASSILLON & PITTSBURG No. 8.

CLEVELAND CITY FORGE & IRON CO.

IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT. COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.

J. B. COWLE, Pres. W. E. PERKINS, Sec'y and Treas
MAT. THOMAS, Gen'l Mgr.

The Union Machine & Boiler Company,

MACHINISTS, FOUNDERS AND BOILER MAKERS.

Jobbing solicited. Steel vessel repairs promptly attended to night or day.

106 TO 114 RIVER STREET. CLEVELAND, O.

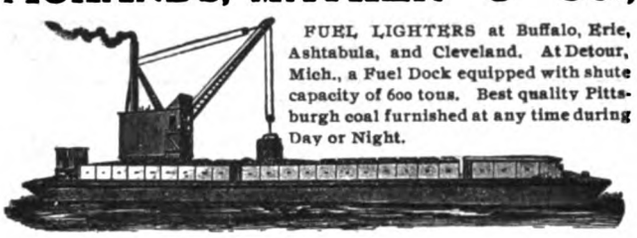
Phones: Bell Main 609. Cuy. A. 711. Night Call Cuy. M. 1848.

HOISTING ENGINES.

We build them in all sizes from new and improved designs. Every engine thoroughly tested before leaving our shop, and guaranteed to be satisfactory in every case. When in want of a hoist for marine work, dock work, mining, or any other purpose, kindly permit us to name you prices. We know we can please you.

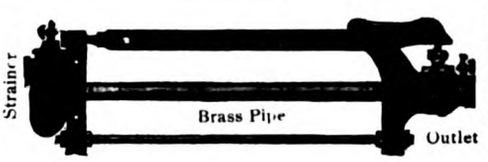
MARINE IRON CO., - - - Bay City, Mich.

PICKANDS, MATHER & CO.,



FUEL LIGHTERS at Buffalo, Erie, Ashtabula, and Cleveland. At Detour, Mich., a Fuel Dock equipped with shute capacity of 600 tons. Best quality Pittsburgh coal furnished at any time during Day or Night.

Western Reserve Building, CLEVELAND, O.



Kieley Expansion Steam Trap

Best Trap made ..for.. **Marine Work.**

Good for any pressure. Valve opens full area.

Also Reducing Valves, Steam Separators and Open Float Traps for Marine Purposes.

Write for Catalogue. **SENT ON TRAIL.**

KIELEY & MUELLER, 7-17 West Thirteen Street, NEW YORK CITY.

De Grauw, Aymar & Company.

ESTABLISHED 1827.

Cordage, Oakum, Vessel and Railroad Supplies.

SOLE MANUFACTURERS IN THE UNITED STATES FOR

TYZACK'S STOCKLESS ANCHORS.

NEW YORK CITY.

BETTER and More ECONOMICAL than DRILLED BOLTS

ANY SIZE, OUTSIDE OR INSIDE DIAMETER.
AVERAGE LENGTH OF HOLLOW BARS EIGHT TO TEN FEET.
FALLS HOLLOW STAYBOLT Co
STAYBOLTS,
BOTH HOLLOW AND SOLID,
MADE OF BEST QUALITY DOUBLE REFINED CHARCOAL IRON OR STEEL.
CUYAHOGA FALLS, O. U.S.A.

FALLS HOLLOW BOLTS are self-inspectors. Afford protection against explosions. Are of uniform strength and flexibility. Hole is central, admits air, which aids combustion. Superior quality guaranteed. Samples of either Hollow or Solid furnished on application. Ask for our latest price list.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

VESSEL AND INSURANCE AGENTS.

T. R. McCARTHY,
Steamship and Freight Broker;
Chartering, Forwarding and General Commission Agent; and Broker for the Sale, Purchase and Construction of Steamers and Sailing Vessels.
Marine and Fire Insurance Effected.
Cable Address, "Macarthy, Montreal"
(Watkins', Scott's Liebers and A. B. C. Codes Used.)
Shipping Agent to The Asbestos & Asbestic Co., Ltd., of Danville, Que. and The Belgo Pulp & Paper Co., Shawinigan Falls Que.
404 Board of Trade Bldg., MONTREAL, CAN.
Correspondence Invited and Agencies Solicited.

S. S. LESTER,
Steamship Agent and Freight Broker.
Manager Steamer
ST. LAWRENCE,
83 Dalhousie St. QUEBEC, QUE.

Insurance.
PRINDIVILLE & COMPANY,
Average Adjusters.
Insurance Brokers.
12 Sherman Street,
CHICAGO.
Representing:
Johnson & Higgins, New York.
Represented by:
Willis Faber & Co., Ltd., London.
Jno. D. Tyson & Co., Liverpool.

P. H. FLEMING & CO.
Insurance and Vessel Agents.
Marine, Fire, Ocean, Liability.
Telephone, Harrison 1359.
No. 2 Sherman St., CHICAGO, ILL.

C. W. Elphicke. J. J. Rardon. M. C. Reuter.
C. W. ELPHICKE & CO.
Vessel and Insurance Agents.
No 6 Sherman St., CHICAGO, ILL.
Telephone, Harrison 1194.

D. Sullivan. F. J. Sullivan.
D. SULLIVAN & CO.
Vessel Agents.
Marine Insurance.
2-4 Sherman St., CHICAGO, ILL.
Office Tel., Harrison 2847. Res. Ashland 2488.

W. A. Hawgood. Arthur H. Hawgood.
W. A. HAWGOOD & CO.
Vessel and Insurance Agents.
220-21 Perry-Payne Bldg. Cleveland, O.
Telephones. { Office, Main 2395. Res. W. A. Hawgood, Doan 84-J. Res. A. H. Hawgood Doan 841-J.

J. Mitchell. J. F. Wedow. A. Mitchell.
MITCHELL & CO.
Vessel and Insurance Agents
508-10 Perry-Payne Bldg. Cleveland, O.
Office Tel. M. 767. Res. John Mitchell, Doan 341.
John F. Wedow, Doan 141-J.
Alfred Mitchell. Doan 218

VESSEL AND INSURANCE AGENTS.

C. L. Hutchinson. W. H. McGean.
HUTCHINSON & CO.
Vessel and Insurance Agents.
Phones: { Office, Main 2453. Res. C. L. Hutchinson, Ridge 845 L. Res. W. H. McGean, East 1421-J.
313-15 Perry-Payne Bldg., Cleveland, O.

W. C. RICHARDSON,
Vessel Owner and Broker and Marine Insurance Agent.
420-421 Perry Payne Building,
CLEVELAND, O.
Office Tel., 338. Residence Tel., 2938.

C. P. GILCHRIST & CO.
Vessel and Insurance Agents.
Sale and Exchange of Vessels a Specialty.
Lumber and Coal Chartering.
Full Telephone Service, Office and Residence.
(Local and Long Distance.)
411 Perry-Payne Bldg., Cleveland, O.

John B. Hall. Harry B. Root.
HALL & ROOT,
Vessel Agents.
21-22 Exchange Bldg., 202 Main St.,
Telephone, Seneca 892. BUFFALO, N. Y.

JOHN J. BOLAND,
Vessel and Insurance Agent.
25-26 Exchange Bldg., 202 Main St.,
Telephone, Seneca 115. BUFFALO, N. Y.

PARKER BROS. CO., LTD.,
Vessel, Marine Insurance and Wrecking Agents Marine Surveyors
Office Tel. Main 5314. Night: Main 290.
Night: Grand 1723 J.
15 Atwater St. West, DETROIT, MICH.

D. T. HELM & CO.
Vessel and Insurance Agents
Telephones—Office 268
Res. 881-3
DULUTH, - - - MINN.

SAMUEL HOLMES,
Steamship Offices,
For Selling, Chartering and Building all Classes Steam Vessels
Steam Vessel Circulars
Weekly Freight Circulars
Morris Bldg, 66-8 Broad St., New York.

F. H. WEEKS,
Marine Broker.
Vessels Sold, Chartered, Built and Insured.
Cable Address, WEEKSHIP, New York.
Telephone, 3275 Broad.
32 Broadway, NEW YORK.

Charles P. Notman. David H. E. Jones.
JAMES W. ELWELL & CO.
Established 1830.
Ship Brokers and Steamship Agents.
Sell and Charter All Classes of Vessels
Agents for Cyprien Fabre & Cie. S.S. Line, Cie. Havraise Peninsulaire and Northwestern S. S. Co. 21-24 State Street, NEW YORK

PROCTORS IN ADMIRALTY.

WILLIAM H. FAUST,
Lieutenant United States Navy, (ret.)
Counselor and Proctor in Admiralty.
Room 344 Federal Building,
BUFFALO, N. Y.

C. E. KREMER,
Counselor at Law and Proctor in Admiralty.
Suite 821-822 New York Life Bldg.,
CHICAGO, ILL.

HOYT, DUSTIN & KELLEY,
Lawyers and Proctors in Admiralty.
Offices, 702 Western Reserve Building,
CLEVELAND, O.

WHITE, JOHNSON, McCASLIN & CANNON,
Attorneys-at-Law and Proctors in Admiralty.
Williamson Bldg, CLEVELAND, O.

GOULDER, HOLDING & MASTEN,
Law Offices
H. D. Goulder. S. H. Holding. F. S. Masten.
Perry Payne Building,
CLEVELAND, O.

ALBERT J. GILCHRIST,
Proctor in Admiralty.
604 Perry Payne Building,
CLEVELAND, O.

HAND BOOK
OF
ADMIRALTY LAW,
by
ROBT. M. HUGHES,
Price, $3.75
THE PENTON PUB. CO.,
Cleveland, O.

MARINE INSURANCE,
by
WILLIAM GOW.
Price, $1.50
THE PENTON PUB. CO.,
Cleveland, O.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

PROCTORS IN ADMIRALTY.

Geo. S. Potter. Meredith Potter.

POTTER & POTTER,

Lawyers and Proctors in Admiralty.

35-36 Dun Building, 110 Pearl Street, BUFFALO, N. Y.

RAY G. MacDONALD,

Attorney-at-Law and Proctor in Admiralty.

630 First National Bank Building,

Telephone, Central 3507 Automatic 8085 CHICAGO, ILL.

SHAW, WARREN, CADY & OAKES,

Attorneys-at-Law.

904 to 907 Union Trust Building,

Telephone, 625. DETROIT, MICH.

NAVAL ARCHITECTURE,

by

THOS. H. WATSON.

A manual on laying off iron and steel vessels. Valuable for naval architects as well as beginners in ship yards.

Price, $5.00

Order from

THE PENTON PUB. CO.,

Cleveland, O.

COMPASS ADJUSTER.

CAPT. J. M. FIELDS

INVENTOR OF AND AGENT FOR

Field's Patent Course Finder.

The Bethel. - CLEVELAND, O.

PROFESSIONAL.

W. J. WOOD,

Naval Architect, Consulting Engineer.

Prepares designs or working drawings and specifications for all classes of vessels and superintends construction and repairs. Surveys damaged property and estimates cost of repairs. Arbitrator and court expert.

FIRE BOATS A SPECIALTY.

Complete Plans furnished for Steel, Composite or Wooden Vessels.

709 Rialto Building, CHICAGO.

Tel. Harrison 1020.

HENRY RICE and H. O. LOVEJOY,

Naval Architects.

Consulting Engineers.

Surveyors of Wood and Steel Ships, Engines and Boilers. Estimates of cost given. Superintendence of building and repairing. Plans and specifications furnished for all classes of ships.

Lines and models furnished.

Room 18,

202 Main Street., BUFFALO, N. Y

JOSEPH KIDD,

Marine Architect and Surveyor.

Consulting Ship Builder and Engineer

Over thirty years' experience. Specifications, designs and estimates. Superintendence of construction and repairs. Damage and other surveys carefully attended to. Negotiations for the building, charter or sale of all kinds of vessels and machinery.

610 Board of Trade,

DULUTH, MINN.

ROBERT W. HUNT & CO.,

Bureau of Inspection.

Tests and Consultation.

1121 The Rookery, CHICAGO.

Monong Bank Bldg., PITTSBURG

66 Broadway, NEW YORK.

Inspectors of shipbuilding material and machinery. Inspectors of all materials. Duty tests of engines and boilers. Physical and chemical laboratories.

AMBROSE V. POWELL,

Member American Society Civil Engineers

Civil Engineer

Designs and Constructs Dry Docks, Harbor Works, Docks, and Plant for Handling Coal and Ore, Foundations

Office, 1008 Chamber of Commerce.

CHICAGO ILL.

PROFESSIONAL.

H. Matteson, Jr. Geo. B. Drake.

MATTESON & DRAKE,

Naval Architects and Consulting Engineers.

Designing and Superintendence of building and repairing steel and wooden vessels.

Bulk oil vessels a specialty.

Agents for marine specialties.

706-707 Bourse, PHILADELPHIA.

ADAM STEEL, JAS. NACEY, ALEXANDER HYND,

Marine Architects.

Mechanical Draughtsmen.

Consulting Engineers.

Specifications and designs for all descriptions of marine vessels, engines and boilers. Supervision of construction and repairs. Damage and other surveys carefully attended to.

208-9 Western Reserve Building,

CLEVELAND, O.

Phone, Main 3339 J.

PITTSBURGH TESTING LABORATORY, Ltd.,

Inspecting and Metallurgical Engineers and Chemists.

Inspectors of shipbuilding materials and machinery. Inspectors located at all mills. Physical and chemical laboratories. Tests of all kinds.

1750 Monadnock, CHICAGO.

235 Water Street, PITTSBURG.

906-7 Crozier Building, Philadelphia, New York City, 60 New Street, Richmond, Va., 1107½ Main Street.

Members Maritime Association Port of N. Y.

SADLER, PERKINS & FIELD,

Naval Architects and Engineers.

Chartering and Brokerage.

Maritime Bldg., New York.

NEW YORK. DETROIT.

NAVAL ARCHITECTS' AND ENGINEERS' DATA BOOK,

By T. H. WATSON.

Price, $1.50

THE PENTON PUB. CO.,

Cleveland, O.

PATENTS.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Buyers' Directory of the Marine Trade

For a more complete classification than that represented by advertisers in the Marine Review, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by the Marine Review, 39-41 Wade Bldg., Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

AIR COMPRESSORS, AIR HOISTS, ETC.
Dake Engine Co.....Grand Haven, Mich.
Great Lakes Engineering Works.....Detroit.
Mietz, Aug. .....New York.

AIR PORTS, DEAD LIGHTS, ETC.
Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.
Baldt Anchor Co.....Chester, Pa.
Bowers, L. M. & Co.....Binghamton, N. Y.
DeGrauw, Aymar & Co.....New York.
Seaboard Steel Casting Co.....Chester, Pa.

ANTI-FOULING AND ANTI-CORROSIVE COMPOSITION FOR STEEL VESSELS.
Holzapfel's American Composition Co..New York.

ANTI-FRICTION METALS.
Cramp, Wm. & Sons.....Philadelphia.
Phosphor Bronze Smelting Co., Ltd.....
.....Philadelphia.
Victor Metals Co.....Braintree, Mass.

ARTIFICIAL DRAFT FOR BOILERS.
American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F., Co.....Hyde Park, Mass

ASH EJECTORS.
Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.
Faust, Lieut. Wm. H.....Buffalo.
Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Kremer, C. E.....Chicago.
MacDonald, Ray G.....Chicago.
Potter & Potter .....Buffalo.
Shaw, Warren, Cady & Oakes.....Detroit.
White, Johnson, McCaslin & Cannon Cleveland.

BAROMETERS, MARINE GLASSES, ETC.
Ritchie, E. S. & Sons.....Brookline, Mass.

BELTING, RUBBER.
New York Belting & Packing Co....New York.

BLOCKS, SHEAVES, ETC.
Boston & Lockport Block Co....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.
Sturtevant, B. F. Co. .....Hyde Park, Mass.

BOAT BUILDERS.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, David.....New York.
Lane & DeGroot ....Long Island City, N. Y.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co....St. Joseph, Mich.
Willard, Chas. P. & Co.....Chicago.

BOILER MANUFACTURERS.
Almy Water Tube Boiler Co.Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Bertram Engine Works Co., Ltd. .....
..... Toronto, Can.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Delauney, Belleville & Co..St. Denis, France.
Detroit Ship Building Co.....Detroit.
Fletcher, W. A. & Co.....Hoboken, N. J.
Fore River Ship & Engine Co..Quincy, Mass.
Forest City Boiler Co.....Cleveland.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Gogebic Steam Boiler Works....Duluth, Minn.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co....Port Huron, Mich.
Kingsford Foundry & Machine Works....
.....Oswego, N. Y.

BOILER MANUFACTURERS—Continued.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Northwestern Steam Boiler & Mfg. Co....
..... Duluth, Minn.
Roberts Safety Water Tube Boiler Co....
..... New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Union Machine & Boiler Co.....Cleveland.
United States Ship Building Co....New York.
Willard, Chas. P. & Co.....Chicago.

BOILER COMPOUNDS.
Dearborn Drug & Chemical Works....Chicago.

BOILER RIVETS.
Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.

BOILER TUBES.
Bourne-Fuller Co. .....Cleveland.

BOOKS, NAUTICAL AND ENGINEERING.
Marine Review Pub Co.....Cleveland.

BRASS AND BRONZE CASTINGS.
Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lunkenheimer Co. .....Cincinnati.
Macbeth Iron Co.....Cleveland.
Phosphor Bronze Smelting Co....Philadelphia.
Victor Metals Co.....Braintree, Mass.

BRIDGES, BUILDERS OF.
Scherzer Rolling Lift Bridge Co....Chicago.

BUCKETS, ORE AND COAL.
Brown Hoisting & Conveying Machine Co.
..... Cleveland.
Forest City Boiler Co. .....Cleveland.
Macbeth Iron Co. .....Cleveland.

CABIN AND CABINET FINISHING WOODS.
Martin-Barriss Co.....Cleveland.

CAPSTANS.
American Ship Windlass Co..Providence, R. I.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CEMENT, IRON FOR REPAIRING LEAKS.
Smooth-On Mfg. Co.....Jersey City, N. J.

CHAINS.
Lebanon Chain Works.....Lebanon, Pa.

CHAIN HOISTS.
Boston & Lockport Block Co....Boston, Mass.
Dake Engine Co.....Grand Haven, Mich.

CHARTS.
Marine Review Pub Co.....Cleveland.
Potter, J. D.....London.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.
Ashton Valve Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

COAL PRODUCERS AND SHIPPERS.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.

COAL AND ORE HANDLING MACHINERY.
Brown Hoisting Machinery Co. (Inc.) ..
..... Cleveland.
Lidgerwood Mfg. Co.....New York.
Macbeth Iron Co.....Cleveland.

COMPASS ADJUSTERS.
Fields, Capt. J. M.....Cleveland.

COMPASSES.
Ritchie, E. S. & Sons.....Brookline, Mass.

COMPOSITIONS FOR SHIP'S BOTTOMS.
Holzapfel's American Composition Co..New York.

CONCRETE MIXERS.
Contractors Supply & Equipment Co..Chicago.

CONDENSORS.
Great Lakes Engineering Works.. Detroit.
Thropp & Sons Co., John E....Trenton, N. J.

CONTRACTORS SUPPLIES.
Contractors Supply & Equipment Co., Chicago.

CONTRACTORS FOR PUBLIC WORKS.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.
..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H..Milwaukee.
Sullivan, M. .....Detroit.

CORDAGE.
Baker & Co., H. H.....Buffalo.
DeGrauw, Aymar & Co.....New York.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.
Armstrong Cork Co.....Pittsburg, Pa.
Kahnweiler's Sons, D.....New York.

COURSE FINDER.
Field's Patent Course Finder.....Cleveland.

CHAIN CONVEYORS, HOISTS.
Brown Hoisting Machinery Co. (Inc.)....
..... Cleveland.
General Electric Co.....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

CRANES, TRAVELING.
Brown Hoisting Machinery Co.....Cleveland.
Lidgerwood Mfg. Co.....New York.
Pawling & Harnischfeger.....Milwaukee.

DIVING APPARATUS.
Morse, A. J. & Son.....Boston.
Schrader's Son, A.....New York.

DREDGING CONTRACTORS.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co..
..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H...Milwaukee.
Sullivan, M. .....Detroit.

DRYING APPARATUS.
Bayley & Sons Co., Wm....Milwaukee, Wis.
Sturtevant, B. F., Co. .....Hyde Park, Mass.

DRY DOCKS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co....Superior, Wis.
United States Ship Building Co....New York.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Buyers' Directory of the Marine Trade.—*Continued.*

ELECTRIC HOISTS AND CRANES.

General Electric Co.....Schenectady, N. Y.
Lidgerwood Mfg. Co.....New York.
Pawling & Harnischfeger.....Milwaukee.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

ELECTRIC LIGHT AND POWER PLANTS.

Bayley & Sons Co.....Milwaukee, Wis.
Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Metz, Aug.....New York.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Thropp & Sons, John E.....Trenton, N. J.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

ENGINE BUILDERS, MARINE.

American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd. .....
..... Toronto, Can.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works Detroit, Mich.
Hill Bros. .....Philadelphia.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Metz, Aug.....New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Morison Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
Roach's Ship Yard .....Chester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.
United States Ship Building Co....New York.
Willard, Chas. P. & Co.....Chicago.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

City, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co.....Chicago.
Kelly & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Mosers & Co., H.....Milwaukee.
New York Belting & Packing Co..New York.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Bland, Alexander .....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kelly, Joseph .....Duluth, Minn.
Lucey, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Mosher, Chas. D.....New York.
Neary, James .....Cleveland.
Pittsburg Testing Laboratory, Ltd...Pittsburg.
Rose, Henry .....Buffalo.
Roelker, H. B.....New York.
Seller, Perkins & Field.....New York.
Steel, Adam .....Cleveland.
Wood, W. J. .....Chicago.

FANS FOR VENTILATION, EXHAUST, ETC.

Sturtevant, B. F. Co.....Hyde Park, Mass.

FEED WATER PURIFIERS AND HEATERS.

Cash Valve Co.....Troy, N. Y.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

FORGES.

Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co....Cleveland.
Fore River Ship & Engine Co..Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons .....Cleveland.

FUEL ECONOMIZERS.

Sturtevant Co., B. F.....Hyde Park, Mass.

FUELING COMPANIES AND COAL DEALERS.

Hanna, M. A. & Co.....Cleveland.
Ironville, Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Picklands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit,
Smith Coal & Dock Co., Stanley B.Toledo, O.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

GASKETS, RUBBER.

New York Belting & Packing Co..New York.

GAS BUOYS.

Safety Car Heating & Lighting Co..New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co.....Cleveland.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Reliance Mfg Co.....City Island, New York.
Temple Pump Co.....Chicago.

GAUGES, STEAM AND VACUUM.

American Steam Gauge & Valve Mfg. Co.
..... Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

GAUGES, WATER.

Bonner & Co., Wm. T.....Boston.
Lunkenheimer Co. .....Cincinnati, O.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

GRAPHITE.

Dixon Crucible Co., Joseph..Jersey City, N. J.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Hyde Park, Mass.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.).....
..... Cleveland.
Chase Machine Co.....Cleveland.
Elwell-Parker Electric Co.....Cleveland.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
..... Midland, Ont.
Hyde Windlass Co.....Bath, Me.
Lidgerwood Mfg. Co.....New York.
Marine Iron Co.....Bay City.
Mietz, Aug.....New York.
Pawling & Harnischfeger .....Milwaukee.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co...Cuyahoga Falls, O.

HOSE, RUBBER.

New York Belting & Packing Co..New York.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.

Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.

INJECTORS.

American Injector Co.....Detroit.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co. .....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.

Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H.....Chicago.
Frankfort Marine, A. & P. G. Ins. Co.....
..... New York.

INSURANCE, MARINE—Continued.

Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F..New York & Chicago.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago
Voss, F. D.....New York.
Weeks, F. H.....New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co.....Cleveland.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Georgian Bay Engineering Works.....
..... Midland, Ont.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Chicago.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.. .....Wilmington, Del.
Kahnweiler's Sons, D. .....New York

LIGHTS, SIDE AND SIGNAL.

Russell & Watson .....Buffalo.

LOGS.

Walker & Sons, Thomas ....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.

Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

LUMBER.

Martin-Barriss Co.....Cleveland.

MACHINISTS.

Chase Machine Co.....Cleveland.
Gogebic Steam Boiler Works....Duluth, Minn.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Union Machine & Boiler Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros. .....Sault Ste. Marie, Mich.

MARINE GLUE.

Ferdinand & Co., L. W.....Boston, Mass.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works ..Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.

MELTING POT AND PAYING LADLE.

(For Paying Seams of Decks with Marine Glue.)

Ferdinand & Co., L. W.....Boston.

METALLIC PACKING.

Katzenstein, L. & Co.....New York.

METAL POLISH.

Bertram's Oil Polish Co.....Boston

MOTORS, GENERATORS—ELECTRIC.

Fisher Electrical Works .....Detroit.
General Electric Co.....Schenectady, N. Y.
Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Hyde Park, Mass
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

Generated on 2024-07-26 21:36 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Buyers' Directory of the Marine Trade.—*Continued.*

NAUTICAL INSTRUMENTS.
Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.
Hynd, Alexander .....Cleveland.
Kidd, Joseph.....Duluth, Minn.
Lovejoy, H. O.....Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Sadler, Perkins & Field.....New York.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

OAKUM.
DeGrauw, Aymar & Co.....New York.
Stratford, Oakum Co.....Jersey City, N. J.

OIL FOR PAINTING.
Sipe & Co., James B.....Allegheny, Pa.

OIL ENGINES.
Mietz, Aug. .....New York.

OILS AND LUBRICANTS.
Dixon Crucible Co., Joseph..Jersey City, N. J.
Standard Oil Co.....Cleveland.

PACKING.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
New York Belting & Packing Co...New York.

PACKING TOOL.
Matteson & Drake .....Philadelphia.

PAINTS.
Baker, Howard H. & Co.....Buffalo.
Detroit Varnish Co.....Detroit.
Detroit White Lead Works.....Detroit.
Forest City Paint and Varnish Co..Cleveland.
New Jersey Zinc Co.....New York.
Sipe & Co., James B.....Allegheny, Pa.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co..
.....Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Parker Bros. Co., Ltd.....Detroit.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H...Milwaukee.
Sullivan, M. .....Detroit.

PIPE, WROUGHT IRON.
Bourne-Fuller Co.....Cleveland.
Crane Co. .....Chicago.
Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.
Bourne-Fuller Co. .....Cleveland.
Otis Steel Co.....Cleveland.

PNEUMATIC TOOLS.
Allen, John F.....New York.

POLISH FOR METALS.
Bertram's Oil Polish Co.....Boston.

PRESSURE REGULATORS.
Kieley & Mueller .....New York.
Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.
American Ship Building Co.....Cleveland.
Atlantic Works .... East Boston, Mass.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.. Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Phosphor Bronze Smelting Co., Ltd.....
..... Philadelphia.
Roelker, H. B.....New York.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp & Sons Co., J. E.....Trenton, N. J.
Trout, H. G.....Buffalo.
United States Ship Building Co....New York.

PROJECTORS, ELECTRIC.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.
Blake, Geo. F., Mfg. Co.....New York.
Great Lakes Engineering Works Detroit.
Kingsford Foundry & Machine Works....
..... Oswego, N. Y.

PUNCHES, RIVETERS, SHEARS.
Allen, John F. .....New York.

RANGES.
Russell & Watson .....Buffalo

REFRIGERATING APPARATUS.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.
Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping..
.....New York.

REPAIRS—ENGINE AND BOILER.
(See also Boiler Manufacturers and Engine Builders.)
Georgian Bay Engineering Works.....
.....Midland, Ont.
Gogebic Steam Boiler Works....Duluth, Minn.
Forest City Boiler Co.....Cleveland.
Marine Iron Co.....Duluth, Minn.

RIVETING MACHINES.
Allen, John F.....New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.
Bourne-Fuller Co.....Cleveland.

SAFETY VALVES.
American Steam Gauge & Valve Mfg. Co.
..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.
Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co.....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.
See Wrecking Companies.

SEARCH LIGHTS.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

SHEARS.
See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.
Bourne-Fuller Co.....Cleveland.
Otis Steel Co.....Cleveland.

SHIP BUILDERS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd.Toronto, Can.
Buffalo Dry Dock Co.....Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Roach's Ship Yard .....Chester, Pa.
Shipowner's Dry Dock Co.....Chicago.
Smith & Son, Abram.....Algonac, Mich.
United States Ship Building Co..New York.
Willard, Chas. P. & Co.....Chicago.

SHIP CHANDLERS.
Baker, Howard H. & Co.....Buffalo.
Marine Mfg. & Supply Co.....New York.
Upson-Walton Co.....Cleveland.

SHIP LANTERNS AND LAMPS.
Russell & Watson .....Buffalo.

SHIP TIMBER.
Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.
Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.
Elwell, Jas. W. & Co.....New York.
Gilchrist & Co., C. P. .....Cleveland.
Holmes, Samuel .....New York.
Lester, S. S. ..... Quebec, Can.
McCarthy, T. R.....Montreal, Can.
Weeks, F. H.....New York.

STEAMSHIP LINES, PASS. AND FREIGHT.
American Line .....New York.
Anchor Line .....Buffalo.
Boston Steamship Co.....Boston.
Cleveland & Buffalo Transit Co.....Cleveland
Detroit & Cleveland Line.....Cleveland.
Erie & Western Trans. Co.....Buffalo.
Goodrich Trans. Co.....Chicago.
International Mercantile Marine Co.....
..... Philadelphia.
Manitou Steamship Co.....Chicago.
Mexican-American S. S. Co..New Orleans, La.
New York & Cuba Mail S. S. Co.....New York
Niagara, St. Catharines & Toronto Ry. &
Nav. Co. .....St. Catharines, Ont.
Northern Michigan Trans. Co.....Chicago.
Red Star Line .....New York.
Richelieu & Ontario Nav. Co. ...Montreal, Can.
United Fruit Co .....Boston.

STEEL CASTINGS.
Macbeth Iron Co.....Cleveland.
Otis Steel Co.....Cleveland.

STEERING APPARATUS.
American Ship Building Co.....Cleveland.
Chase Machine Co.....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Marine Mfg. & Supply Co.....Cleveland.
Moulton Steering Engine Co.....New York.
Pawling & Harnischfeger .....Milwaukee.
Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.
Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.
Gaskin, Edward .....Buffalo.
Hynd, Alexander .....Cleveland.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Parker Bros. Co., Ltd.....Detroit.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

TESTS OF MATERIALS.
Hunt, Robert W. & Co.....Chicago.
Pittsburg Testing Laboratory, Ltd....Pittsburg.

TILING, INTERLOCKING RUBBER.
New York Belting & Packing Co...New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.
Allen, John F.....New York.
Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.
Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.
American Ship Windlass Co..Providence, R. I.
Chase Machine Co.....Cleveland.

TOWING COMPANIES.
Donnelly Salvage & Wrecking Co.....
.....Kingston, Ont.
Great Lakes Towing Co.....Cleveland.
Midland Towing & Wrecking Co., Ltd....
.....Midland, Ont.

TRAPS, STEAM.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Sturtevant Co., B. F., ...Hyde Park, Mass.

TRUCKS.
Boston & Lockport Block Co.....Boston.

TUBING, SEAMLESS.
Shelby Steel Tube Co.....Pittsburg, Pa.

Generated on 2024-07-26 21:37 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Buyers' Directory of the Marine Trade.—*Continued.*

VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co. ..... Boston.
Crane Co. ..... Chicago.
Jenkins Bros. ..... New York.
Kieley & Mueller ..... New York.
Lunkenheimer Co. ..... Cincinnati.
Ross Valve Co. ..... Troy, N. Y.

VALVES FOR WATER AND GAS.

Ross Valve Co. ..... Troy, N. Y.

VARNISHES.

Detroit Varnish Co. ..... Detroit.
Detroit White Lead Works. ..... Detroit.
Forest City Paint & Varnish Co. ..... Cleveland.
New Jersey Zinc Co. ..... New York.
Also Ship Chandlers.

VENTILATING APPARATUS FOR SHIPS.

Barley & Sons Co., Wm. ..... Milwaukee, Wis.
Sturtevant, B. F. Co. ..... Hyde Park, Mass.

VESSEL AND FREIGHT AGENTS.

Boland, John J. ..... Buffalo.
Brown & Co. ..... Buffalo.
Elwell, Jas. W. & Co. ..... New York.
Elphicke, C. W. & Co. ..... Chicago.
Fleming & Co., P. H. ..... Chicago.
Gilchrist & Co., C. P. ..... Cleveland.
Hall & Root ..... Buffalo.

VESSEL AND FREIGHT AGENTS—Con.

Helm & Co., D. T. ..... Duluth.
Hawgood & Co., W. A. ..... Cleveland.
Holmes, Samuel ..... New York.
Hutchinson & Co. ..... Cleveland.
Lester, S. S. ..... Quebec, Can.
McCarthy, T. R. ..... Montreal.
Mitchell & Co. ..... Cleveland.
Parker Bros. Co., Ltd. ..... Detroit.
Prindiville & Co. ..... Chicago.
Richardson, W. C. ..... Cleveland.
Sullivan, D. & Co. ..... Chicago.
Weeks, F. H. ..... New York.

WATER GAUGES.

Bonner & Co., Wm. T. ..... Boston
Lunkenheimer Co. ..... Cincinnati, O.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co. ..... Buffalo.
DeGrauw, Aymar & Co. ..... New York.
Upson-Walton Co. ..... Cleveland.

WHISTLES, STEAM.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co. ..... Boston.
Lunkenheimer Co. ..... Cincinnati.

WINDLASSES.

American Ship Windlass Co. . Providence, R. I.
American Ship Building Co. ..... Cleveland.
Hyde Windlass Co. ..... Bath, Me.
Jenks Ship Building Co. ... Port Huron, Mich.
Marine Mfg. & Supply Co. ..... New York.

WINCHES.

American Ship Windlass Co. . Providence, R. I.
Georgian Bay Engineering Works. ..... Midland, Ont.
Hyde Windlass Co. ..... Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc. ..... Philadelphia.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co. ..... Kingston, Ont.
Great Lakes Towing Co. ..... Cleveland.
Midland Towing & Wrecking Co., Ltd. ..... Midland, Ont.
Parker Bros. Co., Ltd. ..... Detroit.

YACHT AND BOAT BUILDERS.

Bertram Engine Works Co., Ltd. . Toronto, Can.
Drein, Thos. & Son. ..... Wilmington, Del.
Georgian Bay Engineering Works. ..... Midland, Ont.
Truscott Boat Mfg. Co. ..... St. Joseph, Mich.
Willard, Chas. P. & Co. ..... Chicago.

YAWLS.

Drein, Thos. & Son. ..... Wilmington, Del.

ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW.

The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted. The dagger (†) indicates that advertisement appears once a month.

*Allen John F 3
Almy Water Tube Boiler Co. ... 51
American Bureau of Shipping ... 52
American Injector Co 4
American Line 47
American Ship Building Co 11
American Ship Windlass Co 2
American Steam Gauge Co 64
Anchor Line 46
Armstrong Cork Co 64
Ashton Valve Co 14
Atlantic Works 49
*Atlantic Works, Inc 53

Babcock & Wilcox Co 8
Barley & Sons Co., Wm 4
Boldt Anchor Co 63
Boyer, Howard H., & Co. 64
*Bertram Engine Works Co. Ltd. 49
Brake Cons. F., Mfg. Co 14
Boland, J. J 56
*Buckner & Co., Wm. T 12
*Buffalo & Lockport Block Co 45
Buffalo Steamship Co 47
Bucyrus-Fuller Co 14
Burns, L. M. & Co 63
Brown Hoisting Machinery Co., The 2
Buffalo Dry Dock Co 10

Camden Anchor-Rockland Machine Co 13
Crane Machine Co 6
Chicago & Gt. L. Dredge & Dock Co 62
Chicago Ship Building Co 10
Cleveland City Forge & Iron Co . 55
Cleveland & Buffalo Transit Co. . 46
Continental Iron Works 2
Contractors' Supply & Equipment Co 9
Cory, Chas. & Son 54
*Craig Ship Building Co 11
Crapo, Wm. & Sons, S. & E. B. Co 49
*Crandall & Son, H. I. 3
Crane Co 13-51-52

D. & C. Line 46
Dake Engine Co 50
Detroit Drug & Chemical Wks 9
DeGrauw, Aymar & Co 55
Detroit, Belleville & Co 14
Delaware River Iron S. B. & E. Works 49
Detroit Ship Building Co 11
Detroit White Lead Works 2
Donnelly, Joseph 54
Donnelly Salvage & Wrecking Co 52
Drein, Thos. & Son 48
Dunbar & Sullivan Dredging Co. 62

Elphicke, C. W., & Co 56
Elwell, Jas. W., & Co 56
Erie & Western Trans. Co 46

Falls Hollow Staybolt Co 55
Faust, Wm. H 56
Ferdinand & Co., L. W 12
Fields, Capt. J. M 57
Fisher Electrical Works 48
Fitz-Simons & Connell Co 62
Fix's, S., Sons 54
Fleming & Co., P. H 56
Fletcher, W. & A., Co 49
Fogg, M. W 2
Fore River Ship & Engine Co 49
Forest City Boiler Co 54
Forest City Paint & Varnish Co . 50
Frankfort M. A. & P. G. I. Co 52

General Electric Co. 14
*Georgian Bay Engineering Wks. 49
Gilchrist, Albert J 56
Gilchrist & Co., C. P 56
Gogebic Steam Boiler Works 49
Goodrich Trans. Co 46
Goulder, Holding & Masten 56
Great Lakes Engineering Works 5
Great Lakes Register 52
*Great Lakes Towing Co 11

Hall & Root 56
Hanna, M. A., & Co. 55
Hawgood & Co., W. A 56
Helm & Co., D. T 56
Hickler Bros 62
Holmes, Samuel 56
Holzapfel's American Composition Co 53
Hoyt, Dustin & Kelley 56
Hunt, Robert W., & Co. 57
Hutchinson & Co 56
Hyde Windlass Co 64
Hynd, Alexander 57

International Mercantile Marine Co 47
Ironville Dock & Coal Co. 55

Jenkins Brothers 14
Jenks Ship Building Co. 14

Kahnweiler's Sons, David 48
Katzenstein, L., & Co. 48
Kidd, Joseph 57
*Kieley & Mueller 55
Kingsford Foundry & Machine Works 50
Kremer, C. E 56

Lebanon Chain Works 54
LeMois Scientifique et Industrial. 4
Lester, S. S. 56
Lidgerwood Mfg. Co 51
Lockwood Mfg. Co 49
Lovejoy, H. O 57
L. S. & M. S. Ry. 63
Lunkenheimer Co 54

McCarthy, T. R 56
McCurdy, Geo. L 52
†McNab & Harlin Mfg. Co 13
Macbeth Iron Co 64
MacDonald, Ray G 57
Manitowoc Dry Dock Co 49
Manitou Steamship Co 46
Marine Iron Co., Bay City, Mich. 55
Marine Iron Co., Duluth 49
*Marine Mfg. & Supply Co 48
Martin-Barriss Co 51
Matteson & Drake 48-57
Mexican-American S. S. Co 47
Midland Towing & Wrecking Co., Ltd 64
Mietz, Aug 6
Milwaukee Dry Dock Co 10
Mitchell & Co 56
Morse & Son, A. J 54
Mosher Water-Tube Boiler Co ... 51
Moulton Steering Engine Co ... 50

Nacey, James 57
Newport News Ship Building & Dry Dock Co 7
New Jersey Zinc Co 6
New York Belting & Packing Co. 4
New York & Cuba Mail S. S. Co. . 47
Niagara, St. C. & T. Ry. & N. Co. 46
Northern Mich. Trans. Co 46
Northwestern Steam Boiler & Mfg. Co 50

Otis Steel Co 3

Parker Bros. Co 56
Pawling & Harnischfeger 50
Peck, Chas. E. & W. F. 52
*Penberthy Injector Co 8
Phosphor Bronze Smelting Co., Ltd 48
Pickands, Mather & Co 55
Pittsburg Coal Co 9
Pittsburg Testing Laboratory, Ltd 57
Potter & Potter 57
Potter, J. D 48
Powell, Ambrose V 57
Prindiville & Co 56

Record of American & Foreign Shipping 52
Red Star Line 47
Reliance Mfg. Co. 48
Rice, Henry 57
Richardson, W. C 56
*Ritchie & Sons, E. S 55
Roberts Water-Tube Boiler Co... 50
Roelker, H. B 49
Ross Valve Co 54
Russell & Watson 53

Sadler, Perkins & Field 57
Safety Car Heating & Lighting Co 8
Scherzer Rolling Lift Bridge Co .. 53
Schrader's Sons, A 2
Shaw, Warren, Cady & Oakes... 57
*Shelby Steel Tube Co 8
Sheriffs Mfg. Co 53
Shipowners' Dry Dock Co 49
Shipping World 63
Sipe & Co., James B 6
*Smith & Son, Abram 55
Smith Co., L. P. & J. A. 62
Smith Coal & Dock Co., Stanley B 9
Smith, Stanley B., & Co 9
Smooth-On Mfg. Co 62
*Standard Gauge Mfg. Co. 12
*Standard Oil Co 63
Starke Dredge & Dock Co., C. H.. 62
Steel, Adam 57
Stirling Co. 8
Stratford Oakum Co., Geo 53
Sturtevant, B. F., Co 64
Sullivan, M. 62
Sullivan & Co 56
Superior Ship Building Co 10

Taylor Water-Tube Boiler Co.... 51
*Temple Pump Co. 8
Thropp, J. E., & Sons Co 54
Trout, H. G 53
Truscott Boat Mfg. Co. 48

Union Machine & Boiler Co 55
United Fruit Co. 46
Upson-Walton Co. 64

Victor Metals Co. 2

Walker, Thomas, & Son 51
Ward Line 47
*Watson-Stillman Co. 63
Weeks, F. H. 56
Westinghouse Electric & Mfg. Co. 51
White, Johnson, McCaslin & Cannon 56
*Willard, Chas. P., & Co 55
Wood, W. J 57

Generated on 2024-07-26 21:37 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

THE
L. P. & J. A. SMITH
COMPANY.

CONTRACTORS FOR PUBLIC WORKS

Dredging,	Dry Docks and	Bridges,
Harbor Work,	Pier Building,	Submarine
Pile Driving,	Railroads,	Foundations,
Breakwaters,	Canals,	Etc., Etc.

Offices: Williamson Bldg., Cleveland, O.

CHICAGO & GREAT LAKES
DREDGE AND DOCK CO.

OWNS AND OPERATES THE PLANTS OF THE FORMER COMPANIES:
Lydon & Drews Co.,
Hausler & Lutz Co.,
Green's Dredging Co.,
Chicago Star Con. & D. Co.,
McMahon & Montgomery Co.,
Chicago Dredging & Dock Co.,
Griffith, McDermott & Watt Dredging Co.

Contractors for
RIVER AND HARBOR IMPROVEMENTS.
Main Office:—1319-1322 Chamber of Commerce - CHICAGO.

C. H. STARKE DREDGE & DOCK CO.,
Contractors for Public Works.

DREDGING, PILE DRIVING,
AND
SUBMARINE PIPE LAYING.

Canal Street, West of First Avenue,
Milwaukee, - - Wisconsin.

Dunbar & Sullivan Dredging Co., of Buffalo, N. Y.
Will contract to remove ROCK or EARTH on the Great Lakes to 40 ft. depth.
To remove ROCK on Atlantic Coast to 40 ft. depth.
THAT'S ALL.
We SOMETIMES rent plant to responsible parties at OUR terms.

Dredges.
Brian Boru, Steel.
Tipperary Boy, Steel.
Erin Go Braugh.
Drill Boats.
Geo. A. Howells and another, both Steel.
Tugs.
Shaughraun, Steel.
Phil Sheridan, Steel.
Spalpeen, Steel.
Paddy Miles, Steel.
Shaun Rhue, Steel.
Derrick.
Faugh a Ballaugh.

Scows.
Monroe Doctrine, 600 yds., Steel.
Protective Policy, 500 yds., Steel.
Reciprocity, 600 yds., Steel.
Cuba Libre, 250 yds., Steel.
Gold Standard, 250 yds., Steel.
No. 5, 600
No. 6, 600
No. 7, 600
No. 8, 600
4,600
McMyler derrick handling 10 tons at 75 ft. radius.
Small Scows.

N. SULLIVAN,
DREDGING OF ALL KINDS.

THE REMOVING OF DEEP WATER EARTH AND ROCK A SPECIALTY. - - -

53 Woodward Ave. Terrace,
DETROIT, - - - MICH.

The Fitz-Simons & Connell Co.
CONTRACTORS
FOR
PUBLIC WORKS

DREDGING
DOCKS
PILE DRIVING
BREAKWATERS

TUNNELS
CANALS
BRIDGES
FOUNDATIONS

Offices: 1010-1014 Tacoma Building, Chicago.

SMOOTH-ON
TRADE MARK
Iron Cement No. 1
FOR STOPPING BOILER LEAKS.
Send for Catalogue and Prices.
SMOOTH-ON MANUFACTURING CO.
572-74 Communipaw Ave., Jersey City, N. J., U.S.A.
Chicago Office, 61 N. Jefferson Street.

HICKLER BROTHERS
MARINE RAILWAY
Capacity, 1,000 tons.
Draft, 7½ ft. forward, 13½ ft. aft.
Length on keel blocks, 180 ft.; over all, 190 ft.

Machine Shop, Foundry and Steam Forge.
Dredges, Drill Boats and Derrick Scows.

SAULT STE. MARIE, - MICH.

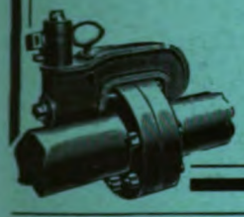
Generated on 2024-07-26 21:37 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

Marine Hydraulic Jacks.

THE first Hydraulic Jack we built very many years ago would be looked upon as primitive and ridiculous alongside of any one of the nearly 300 styles we build to-day. For these many years of Jack Building experience has taught us how to build Hydraulic Jacks that are STRONG, CERTAIN and RELIABLE, without a single weak spot.

In ship building as well as on board ship there is often call for a jack to fit in some small, peculiar shaped space.

Look over our Jack Catalog No. 61, Edition "N."



WATSON-STILLMAN CO.,

Offices:
46 Dey Street, NEW YORK.
453 The Rookery, CHICAGO.
Works: Aldene, Union Co., N. J.

WEEKLY ILLUSTRATED PRICE 6D.

"THE SHIPPING WORLD"

Written by Experts *Illustrated by Artists*

Annual Subscription, United Kingdom $5.11
Other Countries, - - - - $6.82

Contains the best and most informing illustrated literature regarding

Naval Architecture
Marine Engineering
Commercial & Shipping
Questions of the Day

The Shipping World Ld.,

Effingham House, Arundel Street, Strand, LONDON, ENGLAND.

Subscriptions and advertisements for The Shipping World accepted at the Marine Review offices.

LATEST PATENT ANCHOR
THE NATIONAL
APPROVED BY LLOYDS.
Manufactured by
L. M. BOWERS & CO.,
Binghamton, N. Y
Catalogue on Application.

The National and International ANCHORS.
Furnished to the Lake Trade by
The Upson-Walton Co.,
CLEVELAND, O.

IN A RECENT TEST

MADE BY UNCLE SAM,

where both Foreign and Domestic Anchors were considered, the ...

Baldt Stockless Anchor

was the only one approved

For Catalogue and particulars address

The Baldt Anchor Co., Chester, Pa.

LAKE SHORE AND MICHIGAN SOUTHERN RY.

Eastward	Arrive from West	Depart East
No. 18, Southwestern Limited	.....	*1:50 a.m.
No. 22, Lake Shore Limited..	*2:12 a.m.	*2:20 a.m.
No. 20, Chicago and Cleveland Exp.	*7:20 a.m.	.....
No. 28, New York and Boston Exp..	*7:40 a.m.	*8:00 a.m.
No. 40, Toledo and Buffalo Accom ..	†10:00 a.m.	†10:30 a.m.
No. 32, Fast Mail	*11:25 a.m.	*11:50 a.m.
No. 48, Accommodation via Sandusky	†1:40 p.m.	.....
No. 42, Boston-New York Express .	.....	*11:45 a.m.
No 44, Cleveland and New York Spl	.....	*3:00 p.m.
No. 46 Southwestern Express	.....	*3:10 p.m.
No. 116, Ashtabula Accommodation.	.....	†4:30 p.m.
No. 6, Limited Fast Mail	*5:40 p.m.	*5:45 p.m.
No 26, 20th Century Limited.....	*7:40 p.m.	*7:43 p.m.
No. 10, Chicago, N.Y. & Boston Spl.	*7:30 p.m.	*7:50 p.m.
No. 16, New England Express.....	*10:30 p.m.	*10:35 p.m.
No. 2, Day Express	†9:10 p.m.	†9:25 p.m.
No. 126, Norwalk Accommodat on	†7:55 a.m.	....

Westward	Arrive from East	Depart West
No. 7, Exposition Limited.....	*12:50 a.m.	.....
No. 11, Southwestern Limited.	*2:55 a.m.	.....
No 9, Day Express		†6:10 a m.
No. 15, Boston and Chicago Special.	*3:00 a.m.	*3:15 a.m.
No. 19, Lake Shore Limited	*7:15 a.m.	*7:25 a.m.
No. 23, Western Express.....	*10:30 a.m.	*10:35 a m.
No. 29, Southwestern Special.....	‡11:10 a.m.	.....
No 33, Southwestern Express	*12:25 p.m.	.....
No. 133. Cleve and and Detroit Exp.	...	*12:45 p.m.
No. 47, Accommodation	†11:00 a.m.	†3:00 p m.
No. 141, Sandusky Accommodation .	.....	†3:10 p m.
No. 43, Fast Mail	*4:35 p.m.	*4:40 p.m.
No. 127, Norwalk Accommodation ..	.....	†5:10 p.m.
No. 37, Pacific Express	*6:50 p.m.	*7:20 p m.
No. 3, Fast Mail Limited.....	*10.50 p.m.	*10:55 p.m.
No 115, Ashtabula Accommodation.	*8.30 a.m.	.....

*Daily. †Except Sunday. ‡Except Monday.
Trains Nos. 23, 28 and 37 run via Erie Station.
City Ticket Office, 237 Superior St

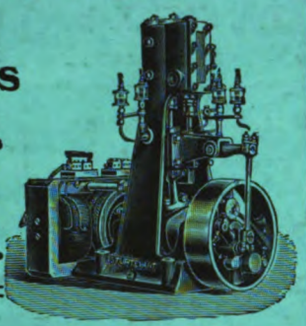
Generated on 2024-07-26 21:37 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY

STURTEVANT

MOTORS and GENERATORS

In a full line of Sizes up to

125 H.P. & 100 K.W.



GENERATING SETS 35 DIFFERENT SIZES From 1½ to 100 K. W.

(288)

ELECTRIC FANS

of standard or special design to meet any requirements.

B. F. Sturtevant Company,

Hyde Park, Mass.

BOSTON. NEW YORK.
PHILADELPHIA. CHICAGO.
LONDON.

AMERICAN

THOMPSON IMPROVED INDICATOR with NEW DETENT MOTION.

DO NOT let this IMPROVEMENT ESCAPE YOUR ATTENTION.

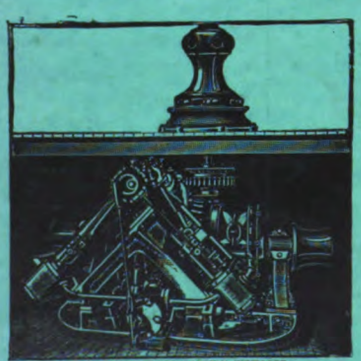
SEND AT ONCE FOR CATALOG

INDICATORS THAT INDICATE
GAUGES THAT GAUGE
POPS THAT POP

AMERICAN STEAM GAUGE & VALVE MFG. CO.

NEW YORK. BOSTON. CHICAGO.

WINDLASSES AND CAPSTANS



THE HYDE STEAM CAPSTAN WINDLASS.

The Hyde Steam and Power Windlasses and Capstans are the best in the market.

They have been selected for most of the vessels now building for the Navy Department, Revenue Marine, Light-house Board and United State Coast Survey

They are being furnished for the majority of the highest class Steam Ships, Merchant Vessels and Yachts now building.

HYDE WINDLASS COMPANY, BATH MAINE.

Marine Repairs

AND

Castings

The Macbeth Iron Company,

CLEVELAND, OHIO.

We handle and keep in stock

WIRE ROPE

of all sizes and lengths suitable for every purpose.

We make a specialty of cutting, splicing and fitting it for every possible requirement.

JAMES PLAYFAIR, { Pres't and Gen. Mgr. D. L. WHITE, Vice President.
J. W. BENSON, Secretary and Treasurer.

MIDLAND TOWING and WRECKING CO., Ltd.

MIDLAND, ONT., CANADA.

FIRST-CLASS TUGS FOR WRECKING, RAFT TOWING, Etc., STEAM PUMPS, DIVERS, JACKS, HAWSERS, LIGHTERS.

LIFE PRESERVERS—BUOYS.

Acme. Solid Cork. Granulated Cork. Each Preserver stamped by U. S. Inspector guaranteeing proper buoyancy. Cork Filled Yacht Fenders. Cork Mooring Buoys. Material and Finish Guaranteed. Orders filled promptly.

ARMSTRONG CORK COMPANY,

Boston. New York. Philadelphia. Pittsburg. Chicago
St. Louis. Baltimore.

Howard H. Baker & Co.,

SHIP CHANDLERS and SAIL MAKERS

18 to 26 Terrace, BUFFALO, N. Y.

Generated on 2024-07-26 21:38 GMT / https://hdl.handle.net/2027/nyp.33433109947543
Public Domain, Google-digitized / http://www.hathitrust.org/access_use#pd-google
Digitized by Google
Original from NEW YORK PUBLIC LIBRARY